TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1932

No. 228

GEORGE A. OHL & COMPANY, PETITIONER,

vs.

THE A. L. SMITH IRON WORKS

No. 229

GEORGE A. OHL & COMPANY, PETITIONER,

vs.

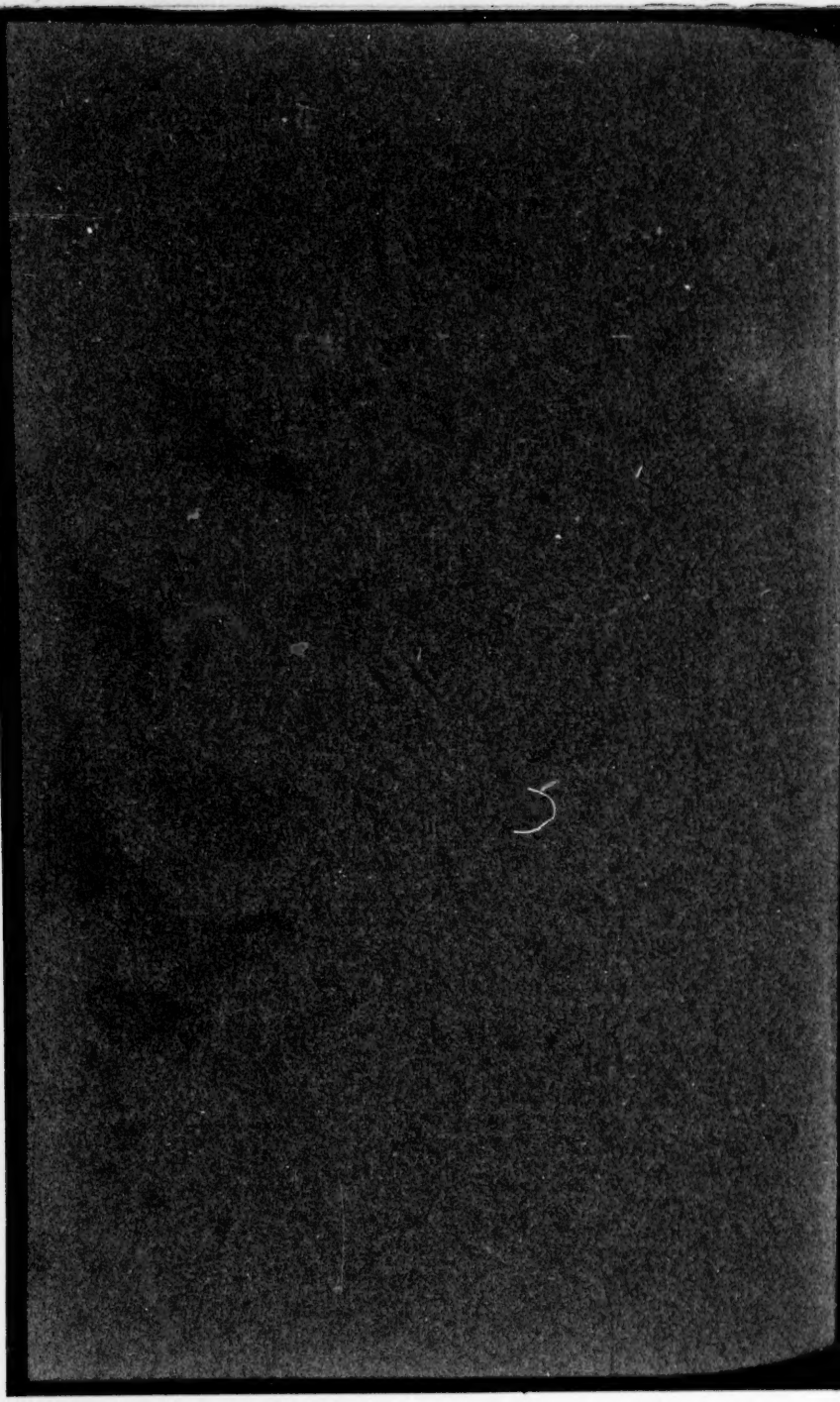
THE A. L. SMITH IRON WORKS

ON WRITS OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE FIRST CIRCUIT

PETITION FOR CERTIORARI FILED JULY 15, 1932

CERTIORARI GRANTED OCTOBER 17, 1932

(36,925, 36,926)



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[fols. a-1] [Caption omitted]

IN UNITED STATES DISTRICT COURT, DISTRICT OF MASSACHUSETTS

No. 3210, Law Docket

GEORGE A. OHL & Co., Plaintiff,

v.

THE A. L. SMITH IRON WORKS, Defendant

On the eighth day of December, A. D. 1927, a bond to dissolve attachment was filed.

The writ and declaration in this cause was filed in the clerk's office on the eighth day of December, A. D. 1927, and are in the words and figures following:

IN UNITED STATES DISTRICT COURT

WRIT OF ATTACHMENT AND SERVICE

MASSACHUSETTS DISTRICT, ss:

[L. S.]

The President of the United States of America to the Marshal of our District of Massachusetts or his deputy, Greeting:

We command you to attach the goods or estate of The A. L. Smith Iron Works, a corporation duly organized under the laws of the Commonwealth of Massachusetts, and domi-[fol. 2] ciled in and having an usual place of business in Chelsea, defendant, to the value of thirteen thousand five hundred dollars, and summons said defendant (if it may be found in your district) to appear before our Judge of the District Court, next to be holden at Boston, within and for our said District of Massachusetts, on the third Tuesday of March, 1928, then and there in our said court to answer unto George A. Ohl & Co., a corporation duly organized under the laws of the State of New Jersey, and domiciled in and having an usual place of business in Newark, New Jersey, plaintiff, in an action of contract to the damage of

said plaintiff (as it says) the sum of thirteen thousand five hundred dollars, which shall then and there be made to appear, with other due damages. And have you there this Writ with your doings therein.

Witness, the Honorable James M. Morton, Jr., at Boston, the sevente-nth day of November in the year of our Lord one thousand nine hundred and twenty-seven.

James S. Allen, Clerk.

Acceptance of Service on Writ

December 7, 1927.

Due and sufficient service of the within process is hereby ac-epted by and on behalf of the within named defendant.

The A. L. Smith Iron Works, by Martin Witte, its Attorney.

In United States District Court

Plaintiff's Declaration—Filed December 8, 1927

Count 1. The plaintiff says the defendant made and delivered to the plaintiff a promissory note whereof Exhibit A hereto annexed is a copy; that said note was not paid when due but was protested.

Wherefore the defendant owes the plaintiff the amount of said note, with interest thereon, together with protest fees amounting to $2.04.

* * * * * * *

[Memorandum.—Copies of Counts 2 to 12, both inclusive, are here omitted, as they are the same as Count 1; and Exhibits B to L, both inclusive, are here omitted, as they are [fol. 3] the same as Exhibit A, except each note is one month later in date of payment than the preceding.—James S. Allen, Clerk.]

Wherefore the defendant owes the plaintiff the amount of said note with interest thereon.

Lee M. Friedman, by Friedman, Atherton, King & Turner, Its Attorneys.

EXHIBIT A TO DECLARATION

$542.00.

Chelsea, Mass., March 1st, 1926.

Six Months after date we promise to pay to the Order of Geo. A. Ohl & Company Five Hundred Forty-two 00/100 Dollars Payable at Chelsea Trust Company, Chelsea Mass. with interest, Value Received, at 6% per annum.

The A. L. Smith Iron Works, by Arthur L. Smith, Treas.

No.—. Due ——, ——.

Upon the filing of the writ and declaration herein, an order to plead was entered.

IN UNITED STATES DISTRICT COURT

ANSWER—Filed February 29, 1928

And now comes the defendant and for answer denies each and every allegation in the plaintiff's writ and declaration contained as well as each allegation and particular in each and every count of said declaration, as if each of said counts and the allegations thereof were separately and specifically denied.

And further answering the defendant says that if the plaintiff shall establish the notes declared upon in each of the counts contained in the plaintiff's declaration, then each of said notes was given without consideration therefor, and the plaintiff is, therefore, not entitled to recover.

And further answering the defendant says that if the plaintiff shall establish the notes declared upon in each of [fol. 4] the counts contained in the plaintiff's declaration, then the consideration therefor has failed and the plaintiff is, therefore, not entitled to recover.

The Defendant, by Its Attorney, Martin Witte.

IN UNITED STATES DISTRICT COURT

PLAINTIFF'S MOTION FOR SPECIFICATIONS—Filed May 19, 1928

The plaintiff moves that the defendant be ordered to specify in what particulars the consideration given for the

notes declared on in this action failed as the defendant in the third paragraph of its answer alleges.

Friedman, Atherton, King & Turner, Its Attorneys.

In United States District Court

Minute Entries of Trial

This cause was thence continued from term to term to the March Term, A. D. 1929, when, to wit, April 16, 1929, issue having been joined, a jury was duly empanelled to try the issue, the Honorable James A. Lowell, District Judge, sitting.

Said cause was thereupon set down for hearing and was tried with case No. 3267, Law Docket, The A. L. Smith Iron Works, Plaintiff, v. George A. Ohl & Co., Defendant on the seventeenth, eighteenth, twenty-third, twenty-fourth, twenty-fifth, twenty-sixth and thirtieth days of April, A. D. 1929 and on the first, second, third and seventh days of May, A. D. 1929.

On the said twenty-fifth day of April, A. D. 1929, the following Motion for Election was filed and denied by the court:

In United States District Court

Motion for Election—Filed April 25, 1929

The plaintiff moves that the defendant be required to elect whether it will proceed under its defense in this action or under its cross action being tried herewith.

Friedman, Atherton, King & Turner, Its Attorneys.

[fol. 5] Also, on the same day, the following Motion for Directed Verdict was filed by the plaintiff and denied by the court:

In United States District Court

Motion for Directed Verdict—Filed April 25, 1929

The plaintiff moves that the court herein direct a verdict for the plaintiff.

Friedman, Atherton, King & Turner, Its Attorneys.

IN UNITED STATES DISTRICT COURT

VERDICT—May 7, 1929

The jury find for the defendant.

Fred H. MacDonald, Foreman.

IN UNITED STATES DISTRICT COURT

PLAINTIFF'S MOTION FOR NEW TRIAL—Filed May 9, 1929

The plaintiff in this action now moves that the verdict of the jury be set aside, and moves that a new trial be granted on the following grounds, to wit:

1. One of the jurors during the trial took notes concerning evidence and testimony and used the same during the deliberations of the jury.

2. One of the jurors took notes during the arguments and used the same during the deliberations of the jury.

3. One or more of the jurors took measurements of exhibits during trial recesses and referred to the same during the deliberations of the jury.

4. The verdict as it concerns the defendant's damage is excessive.

5. The verdict as it concerns the defendant's damage is against the evidence.

[fol. 6] 6. The verdict as it concerns the defendant's damage is against the weight of the evidence.

7. The verdict as it concerns the defendant's damage is against the law and the evidence.

8. The verdict as it concerns the defendant's damage is against the law.

Lee M. Friedman, by Friedman, Atherton, King & Turner, Its Attorneys.

IN UNITED STATES DISTRICT COURT

MINUTE ENTRIES

This cause was thence continued from term to term to the September Term, A. D. 1929, when, to wit, September 30, 1929, a draft bill of exceptions was filed by the plaintiff, within extended time, and assented to.

This cause was thence continued from term to term to the March Term, A. D. 1930, when, to wit, May 14, 1930, said cause was set down for hearing on the aforementioned motion for new trial, the Honorable James A. Lowell, District Judge, sitting, and it was ordered that said motion for new trial be overruled.

At the same term, to wit, May 21, 1930, a draft bill of exceptions concerning plaintiff's motion for new trial was filed and assented to.

The cause was thence continued to the present June Term, A. D. 1930, when, to wit, August 8, 1930, a substituted bill of exceptions on behalf of George A. Ohl & Company, applying also to the aforementioned case No. 3267, Law Docket, is filed and assented to.

On the said eighth day of August, a motion to amend substituted bill of exceptions is filed.

Also on the said eighth day of August, A. D. 1930, a stipulation with reference to exhibits re appeal is filed.

On the twentieth day of August, A. D. 1930, the substitute bill of exceptions, the motion to amend substitute bill of exceptions, and the bill of exceptions concerning plaintiff's motion for new trial are allowed.

IN UNITED STATES DISTRICT COURT

JUDGMENT

Thereupon, to wit, September 8, 1930, it is considered by the court, the Honorable James A. Lowell, District Judge, [fol. 7] sitting, that the said George A. Ohl & Company, plaintiff, take nothing by its said writ, and that the said A. L. Smith Iron Works, defendant, recover of said plaintiff its costs of suit taxed at —.

IN UNITED STATES DISTRICT COURT

No. 3210, Law Docket

GEORGE A. OHL & COMPANY

v.

A. L. SMITH IRON WORKS

No. 3267, Law Docket

A. L. SMITH IRON WORKS

v.

GEORGE A. OHL & COMPANY

Substitute Bill of Exceptions on Behalf of George A. Ohl & Company—Filed August 8, 1930; amended and allowed August 20, 1930

These two actions were tried together by the court with jury. This bill of exceptions is filed by George A. Ohl & Company, physically in the first above named action and by reference in the second.

The A. L. Smith Iron Works is referred to as "Smith" and George A. Ohl & Company as "Ohl." Exhibits referred to by numbers were introduced in evidence by Ohl, and those referred to by letters by Smith. Mr. Friedman tried for Ohl and Mr. Gallagher and Mr. Witte for Smith.

The first action is in contract by Ohl against Smith on twelve promissory notes made payable by Smith to Ohl each for five hundred forty-two dollars ($542) and aggregating six thousand, four hundred and four dollars ($6,404) with protest fees of eight dollars and sixteen cents ($8.16) and interest at six percent (6%) per annum from their respective dates, March 1st, 1926. The writ in that action is dated November 17, 1927, and the answer is one of general denial, want of consideration and failure of consideration.

The second action is brought by Smith against Ohl, upon a written contract of conditional sale, for breach of an express and an implied warranty. The writ in that second action is dated December 7, 1927, and the answer admits the contract and its terms, denies all other allegations and sets

up an examination and acceptance of the merchandise by Smith in satisfaction of all warranties.

[fol. 8] The promissory notes in the first action are those given Ohl by Smith under the written contract in the second action.

The pleadings may be referred to.

Ohl in the first suit on May 14, 1928 moved for specifications under Smith's answer and in the second suit for specifications under Smith's declaration. Smith filed specifications under his declaration in the second suit and the parties agreed that they also be considered as specifications under Smith's answer in the first suit. Those specifications as amended on December 7, 1928 are as follows:

ANSWER TO DEFENDANT'S MOTION FOR SPECIFICATIONS

Now comes the plaintiff in the above-entitled action and, for answer to the defendant's motion for specifications, specifies as follows:

1. In answer to paragraph 1 of the defendant's motion, the plaintiff specifies that the press described in the plaintiff's declaration was set up and installed by the plaintiff between the dates of March 15, 1926 to April 15, 1926, inclusive.

2. In answer to paragraph 2 of the defendant's motion, the plaintiff specifies that the press was first operated by the plaintiff on April 15, 1926.

3. In answer to paragraph 3 of the defendant's motion, the plaintiff specifies that the press from the very beginning rendered unsatisfactory service in the following particulars:

(a) The press stalled.

(b) The fly-wheel assembly operated defectively and improperly.

(c) The clutch that raises and lowers the hammer for adjustment operated defectively and improperly.

(d) The press did not bend sheets of soft steel properly.

(e) The press could not be operated for any length of time without overheating.

4. In answer to paragraph 4 of the defendant's motion, the plaintiff specifies that the press failed to accomplish the

purposes for which it was purchased in that it failed to bend properly sheets of steel as thick as three-eighths of an inch, and in that its material and workmanship was not of the best.

[fol. 9] 5. In answer to paragraph 5 of the defendant's motion, the plaintiff specifies that the press failed to conform to the warranties and specifications referred to in the plaintiff's declaration and as alleged in that declaration on page 2, last paragraph, in that it failed to bend properly sheets of soft steel as thick as three-eighths of an inch, and in that its material and workmanship was not of the best.

6. In answer to paragraph 6 of the defendant's motion, the plaintiff specifies that the press failed properly to bend sheets of soft steel three-eighths of an inch in thickness in that there was a material deflection or bowing after each bending operation, and in that the angles after each bending operation were not perfect.

7. In answer to paragraph 7 of the defendant's motion, the plaintiff specifies that the following parts of said press were not of the best material and workmanship, and were defectively and improperly constructed both with reference to workmanship and material:

(a) The 16-inch bronze bushing in the housing connected with the fly-wheel shaft.

(b) The fly-wheel assembly.

(c) The clutch that raises and lowers the hammer for adjustment.

(d) The housings or stanchions.

8. In answer to paragraph 8 of the defendant's motion, the plaintiff specifies that the material and workmanship was poor,

(a) In the 16-inch bronze bushing,

(b) in the fly-wheel assembly,

(c) in the clutch aforesaid,

(d) in the housings or stanchions.

9. In answer to paragraph 9 of the defendant's motion, the plaintiff specifies that the following are the dates of the notices alleged in the paragraph on page 3 of the plaintiff's declaration:

(a) June 25, 1926;

(b) August 13, 1926;

(c) August 23, 1926;
(d) August 25, 1926;
[fol. 10] (e) September 1, 1926;
(f) September 3, 1926.

10. In answer to paragraph 10 of the defendant's motion, the plaintiff specifies that all of the above notices were written except the one dated September 1, 1926, which was oral.

11. In answer to paragraph 11 of the defendant's motion, the plaintiff specifies in a conversation between the representatives of the plaintiff company and a representative of the defendant company on or about September 1, 1926, at the plant of the plaintiff company, during and after an inspection of the machine in question by these respective representatives, the plaintiff's representatives told the defendant's representative that

(a) The clutch had been causing considerable trouble.
(b) The stringers had not been bending properly.
(c) That the machine was not producing the results for which it was purchased.
(d) That the machine was causing the plaintiff trouble and putting it to considerable expense.
(e) That the plaintiff company had been calling the attention of the defendant company to these difficulties long before the time of this conversation and had requested the defendant company to send some one to the plaintiff's plant to investigate the plaintiff's difficulties with the machine.

12. In answer to paragraph 12 of the defendant's motion, the plaintiff specifies that said oral notice was given to the aforementioned representative of the defendant company, Mr. Kolarsey.

Now comes the plaintiff and moves to amend the answers filed by it to the defendant's motion for specifications as follows:

To amend answer No. 7 by adding the following paragraph:

As a direct result of defective material and improper workmanship and the breaking of the upright stanchion, the plaintiff was compelled to install a repair device which reduced the effective width of the machine by 18 inches and

prevented the plaintiff from bending pieces of steel longer than 10½ feet.

The following is all the testimony material to the issues [fol. 11] presented in this bill of exceptions, and submitted herewith are copies of all the exhibits in evidence material to those issues and which are not set forth at length or in their material parts in the testimony itself.

Counsel for Ohl read the writs and pleadings in each case to the court and jury, including the Smith specifications, stated to the court and jury the agreement as to the specifications being considered as filed by Smith in each suit, made his opening, introduced in evidence the promissory notes declared on as Exhibits 1 to 12 inclusive and rested.

Having opened his case, Smith introduced evidence as follows:

Exhibit A was introduced and read as follows:

EXHIBIT "A"

Newark, N. J., March 9th, 1926.

We hereby guarantee that the 12′ 6″—103,000 lb. Power Press has a capacity as stated in our specifications of said Press, namely 3/8″ soft steel on square Dies the female of which measures 3″ across the corners, and that the material and workmanship are of the best.

Geo. A. Ohl & Company. F. J. Wepler Secretary.
(Seal.)

[Above physically attached to following:]

Memorandum of Agreement made and entered into this first day of March, Nineteen Hundred twenty-six, by and between George A. Ohl & Company, of the City of Newark, County of Essex and State of New Jersey, of the first part, and the A. L. Smith Iron Works, a corporation duly established under the laws of the Commonwealth of Massachusetts and having a usual place of business in Chelsea, in the County of Suffolk and Commonwealth of Massachusetts, of the second part, Witnesseth, that the said party of the first part hath and by these presents doth let unto the said party of the second part—

One (1) Standard 12′ 6″ Power Press or Brake weight about 103,000 lbs. 4″ stroke, opening in each housing 42″ wide x 16″ high, as per Ohl & Co. blueprint #53, for belt [fol. 12] power with motor extras and with one 30 H. P. Fairbanks Morse Motor, 220 volt, 1200 R. P. M. A. C., 3 phase, 60 cycle, with oil compensator but no base rails or pulley.

One (1) Set Unannealed Tool Steel Dies, #1400A/1401A —6′ 2″ long, with four gauges in bottom die and vise recesses in top die. Ohl & Co. drawing #5190A.

One (1) Set Unannealed Tool Steel Dies, #1402A/1403A, 6′ 2″ long, with four gauges in bottom die and vise recesses in top die. Ohl & Co. drawing 5190A.

One (1) Set Unannealed Tool Steel Dies, #1404A/1405A, 6′ 2″ long with four gauges in bottom die and vise recesses in top die. Ohl & Co. drawing 5191A.

One (1) Set Unannealed Tool Steel Dies, #1406A/1407A, 6′ 2″ long, with four gauges in bottom die and vise recesses in top die. Ohl & Co. drawing 5191A.

One (1) Set unannealed Tool Steel Dies, #1408A/1409A, 1409A, 6′ 2″ long, with vise recesses in top die. Ohl & Co. drawing, #5192A.

All for #11 U. S. Standard Gauge Sheet Steel. One (1) Set Machinery Steel Standard Heavy Square Dies, #150a/151A, with tool steel inserts, 12′ 2″ long. Ohl & Co. blueprint #490. 2¼″ across the corners of the female die.

for the term of eighteen (18) months from the date hereof and for the sum of Twelve thousand nine Dollars and sixty-eight cents ($12,009.68), to be paid by the said party of the second part as follows: One thousand ($1000.00) Dollars in cash with order, One Thousand ($1000.00) Dollars when machine is ready for delivery, Two Hundred fifty ($250.00) Dollars in cash with order for dies, (receipt of Two Thousand Two Hundred fifty ($2250.00) Dollars acknowledged herewith), and the balance of Nine Thousand Seven Hundred Fifty Nine Dollars and Sixty-eight cents ($9759.68) by eighteen (18) monthly notes, the first note for Five Hundred Forty-five Dollars and Sixty-eight cents ($545.68) and seventeen (17) notes of Five Hundred Forty-two ($542.00) each, the first note due and payable thirty days from date hereof and the remaining notes thereafter at intervals of [fol. 13] one month each or sooner: said notes, however,

not to be considered as payment until actually paid for in cash, interest to be charged at the rate of six percent (6%) per annum.

The said party of the second part covenants and agrees to pay the said sums of money promptly as they fall due and that the said machine shall be shipped to their place of business, No. 217-233 Everett Ave., Chelsea, Mass., and there held and kept and not removed therefrom without the consent of the party of the first part thereto first had and obtained, and at the expiration or sooner determining of the said term of eighteen (18) months they will quit and surrender the said machines in as good condition as reasonable wear and use will permit.

And it is further agreed by and between the parties to these presents, that if default shall be made in the payment of the first, or any of the above named payments or, if the said party of the second part shall violate any of its covenants, herein, then it shall be lawful for and the said party of the first part may re-enter into possession of said machine, take away, re-possess and enjoy the same as though these presents were not made.

And the said party of the first part doth hereby covenant and agree that the said party of the second part, on paying the above mentioned sums and performing covenants herein, shall and may peacefully and quietly have, hold and enjoy the said machine for the said term.

And the said party of the first part doth hereby covenant and promise and agree to and with the said party of the second part, that if it the said party of the second part shall well and truly keep its covenants herein made, and make no default in the payment of the aforesaid sums, as the same shall become due and payable, and this lease shall not be determined sooner by mutual consent or otherwise, that the said party of the first part will make, execute and deliver to the said party of the second part a bill of sale for said machine, the consideration whereof shall be the amount of the above sums of money or installments of hire, and Five [fol. 14] Dollars additional, payment of said Five Dollars after the expiration of this lease, being the condition precedent to right of purchase.

And the said party of the second part does hereby covenant and agree to keep the said tools in good order and

repair, reasonable wear and tear excepted, and insured against the loss or damage by fire during the continuance of this Lease, in the sum of at Least Nine Thousand Seven Hundred Fifty-nine Dollars and Sixty-eight cents ($9,759.68) in a good company, approved of by the said party of the first part, and in the name and for the benefit of the said party of the first part, and in default thereof the said party of first part may effect such insurance, and the premium so paid for effecting the same shall be paid to him by the said party of the second part.

The said party of the second part shall not assign this lease, or underlet the said personal property without the personal consent of the party of the first part.

It is agreed that the chattels hereinbefore referred to are to remain the property, and subject to the order, of the party of the first part until paid for in full. No payment on account and receipt therefor shall divest such title until said sum has been fully paid.

All part payments made on the said chattels shall be forfeited in case of failure to pay the full amount as herein agreed, and the party of the first part shall have the right to enter, detach, take possession of and remove the said chattels delivered and set up under this contract, and the sum forfeited shall compensate the party of the first part for the erection, depreciation in value, dismounting and removal of said goods.

In Witness whereof, the said parties hereto have hereunto set their hands and seals at Newark, New Jersey, and the day and year first above written.

George A. Ohl & Co. Geo. A. Ohl & Co. George A. Ohl, Jr., Pres. (Seal.) Witness: A. Souter. The A. L. Smith Iron Works, by Arthur L. Smith, Treas. (Seal.) Witness to: George T. Shannon.

[fol. 15] Arthur L. Smith, called by Smith, testified as follows:

"My name is Arthur L. Smith, I live at Sewell Woods Road, Melrose, and am in the iron works business with A. L. Smith Iron Works; have been in business over thirty years, and company's business is at 217 Everett Avenue, Chelsea.

I am its president and treasurer, Mr. Lerner is our vice-president and Mr. Hovasse is master mechanic. The company is engaged in structural steel, ornamental iron business and at times in special work, buying the raw material in lengths for structural and in bars or sheets for ornamental purposes in carload lots shipped to the plant where it is fabricated according to plans, specifications and details. The machine in question relates only to the ornamental department operating on structural steel plates, of all sizes, but in the ornamental department we usually use from 3/8 of an inch thick down. We commonly used from 1/16 inch thick and less up to 5/16. This steel is purchased under thickness or gauge specifications. It is placed on a machine and bent to form stair stringers or the sides of a stair upon which the tread and risers are riveted. The tread and risers are formed on the same machine on different dies of the same material. This is called ornamental work and the company generally installs it in the building where it is to be used under bids and according to plans and specifications. The stringers are usually bent to a 90 degree angle or square. It makes a difference whether the workmanship is straight or bowed. Bowing means that the plate after being bent is not perfectly straight but bowed on the edge; deflection is the bending under pressure of the machine which straightens out when the pressure is removed; both bowing and deflection refer to lack of alignment; spreading means the angle is not perfectly square with the sides out of line.

I think I met Mr. Ohl personally several years before the order in controversy at his plant. Before commencing negotiations with Ohl on this order, I enquired among Boston machinery brokers and received prices. Thereafter I went to see Ohl about my particular requirements for this machine, I should say two or three months before I gave the order. That is not definite because I have not got the date. [fol. 16] I think I met Ohl twice before I gave the order, the first time perhaps a month before, possibly the latter part or middle of November."

The following then took place:

"Q. 1. As near as you can fix it now we will assume it was later than October—could you tell what talk you had?

[Discussion at the bench.]

The Court: I will allow it and save your exception.

Mr. Friedman: Save my exception to all the oral conversation prior to the date of the written contract declared on.

The Court: All right.

Q. 2. Now, will you state if you can the substance of your first talk with Mr. Ohl with reference to this machine?"

The witness then testified: "I visited Ohl's plant, asked to be shown through, asked a lot of questions about what the machines would do and told him what I wanted. The whole conversation naturally hinged on the machine. I cannot remember just what took place. I told Ohl I wanted a 12 foot 6 inch press and he replied, 'I can build it for you.' I told him I wanted a machine strong enough to bend ⅜ plates and he said, 'Yes, I can build one for you that will bend ½ inch.' We were looking at a 10 foot machine and he took me to see some 10 foot machine patterns and said, 'I can make that 12 foot 6 inches long.' I told him we wanted this machine for our Chelsea factory. I asked him whether his machine is as strong as a steel frame machine and he said, 'If I thought the other makes of machine made out of steel were better than mine I would make mine out of steel too.' I had never had any experience in making machines. I told Mr. Ohl what my line was, telling him substantially as described on the witness stand. Ohl said he had built machines all his life and sold them all over the world."

"Q. 3. Now, as a result of that talk, did you talk later with Mr. Ohl? Did you again talk with him about this matter of the machine, of building you a machine?

A. I think the second time I came down to see him was the time I gave him the order.

[fol. 17] Q. 4. And when was that?

A. I should say possibly a week or two weeks later.

Q. 5. Will you tell any talk that you had with him at that time?

A. Terms was one of the talks after I got together with him on the price.

Q. 6. Well, I don't see why you—— Won't you tell, if you will, please, what he said, everything you can remember that you said to him on prices and terms, what the machine was to be used for, and all things.

A. I don't remember." * * *

"Q. 7. Outside of the terms and prices, on which there is no dispute, was there anything further said about the life of the machine or what you wanted it for? * * *

"A. Mr. Ohl made a statement to me, 'If that machine didn't bend three-eights you can have the machine for nothing,' which he never did; that is, he didn't give me the machine for nothing." * * *

Q. 8. About the lifetime of the machine. Anything said of that sort?

A. Well, there was a guarantee that it would do the work.

Q. 9. No. I am asking you what was said by Mr. Ohl, if anything, about how long the machine would last and what work it would do?

A. Well, he prided himself on the fact that he had machines 40 or 50 years old."

I wrote Ohl as follows (Exhibit B):

EXHIBIT B

33 Sewall Woods Rd.,
Melrose, Mass., November 24, 1925.

Geo A. Ohl & Co., 151 Oraton St., Newark, N. J.

GENTLEMEN: As per a quotation made to me on November 9, 1925 for a 12'-6 Power Press of 3/8" capacity, opening in a housing 42" x 16", to this I want to add one (1) motor bracket, one (1) rawhide motor pinion, one (1) combination cut gear flywheel, also the furnishing and mounting of a 30 horse power motor.

The total amount of machine, brackets, and motor is Ten Thousand Seven Hundred and Ninety-Five ($10,795.00) Dollars f. o. b. your siding Railroad.

[fol. 18] Please execute a contract direct with The A. L. Smith Iron Works of Chelsea, Mass., and they will sign same and return to you.

All payments as mentioned in this order are to be made directly by them in the following manner; One Thousand ($1,000.00) Dollars with the signing of the order, One Thousand ($1,000.00) Dollars when you notify them that the machine is loaded on cars, and the balance of Eight Thousand Seven Hundred and Ninety-Five ($8,795.00) Dollars in

eighteen (18) equal notes dated from the date that your machine is loaded on cars and payment monthly thereafter, bearing 6% interest per annum.

The machine is to cover such contract that you usually make out in the event of a machine purchased on instalments.

It is understood that whatever commission is due me I will collect directly from The A. L. Smith Iron Works.

Very truly yours, A. L. Smith.

ALS:SS.

We received from Ohl the following letter (Exhibit C):

EXHIBIT C

Dec. 4, 1925.

A. L. Smith, agent, 33 Sewall Woods Road, Melrose, Mass.

Re: our order # 23557

DEAR SIR: We are enclosing herewith our acknowledgment of your order of the 24th ult., also eighteen thirty-day notes, one for $499.00 and seventeen for $488.00 each, with interest at 6% per annum, and our agreement in triplicate, all of which we have made out to the A. L. Smith Iron Works of Chelsea, Massachsetts, to whom the machine is to be shipped.

Will you please have an officer of the A. L. Smith Iron Works sign these notes and the agreement, which must also be signed by a witness, as indicated by "X" on the last sheet, and on the notes they should also insert the name of their bank unless they wish the notes made payable at their office [fol. 19] in which case their address should be inserted. The notes and agreement will be dated date of shipment of the machine.

These notes and all copies of the agreement should be returned to our office as promptly as possible with a check for $1000.00, which is to be paid on entering of the order.

Thanking you to please give this matter your prompt attention, we are,

Yours very truly, Geo. A. Ohl & Company.

Encl. FJW:TJ.

[It was agreed that the agreement above referred to was a conditional bill of sale or lease, later superseded by that

dated March 1, 1926. Confirmation referred to in the above exhibit is submitted with this bill of exceptions and is marked "Exhibit D".]

The Smith Company did not sign the notes referred to in Exhibit C but sent the $1,000.00 payment referred to.

My company received the following letter (Exhibit E):

EXHIBIT E

December 9th, 1925.

A. L. Smith Iron Works, 217 Everett Ave., Chelsea, Mass.

Our order #23557

GENTLEMEN: Referring to the visit of your Mr. Smith a few days ago, we understand you will send us your check for $1000.00 and return the notes unsigned. Later we will send the notes and agreement at the time the machine is ready for shipment.

Very truly yours Geo. A. Ohl & Company.

GAO. Jr.-S.

Prior to my talks with Ohl, the company had formed metal by using pieces and bolts, as well as by bending it and I desired to get a machine to bend it in one operation. My company received the following letter from Ohl (Exhibit F):

EXHIBIT F

December 14th, 1925.

A. L. Smith Iron Works, 217 Everett Ave., Chelsea, Mass.

GENTLEMEN: As requested by Mr. A. L. Smith, and, in answer to your letter of the 25th ult., we enclose drawings [fol. 20] #5190 to 5193, inclusive, showing dies for forming tread and riser ends, 6′ 2″ long, and, such dies made of unannealed tool steel will cost 20c lb. for the tool steel and $2.00 per hour for the machine work, the approximate prices being as follows:

Dies #1400/1401 will cost approximately	$140.00
Dies #1402/1403 (which are much heavier) will cost aproximately	200.00
Dies #1404/1405 will cost approximately	180.00
Dies #1406/1407 will cost approximately	170.00
Dies #1408/1409 will cost approximately	200.00

The corners will be as sharp as the material will allow. Prices f. o. b. our shop, boxing extra at cost price to us (if any boxing is needed) delivery about two weeks after receipt of order. This will be a separate order from the Power Press, and we will arrange easy terms, say one-quarter amount with order, one-quarter when shipment is made, and balance in ten equal monthly payments or notes with 6% interest, and our regular agreement to be signed. Hoping to receive your order, remain,

Yours very truly, Geo. A. Ohl & Company.

Encls. GAO. Jr.-S.

With this letter the company received drawings of the dies referred to. My company did not furnish Ohl with any drawings as a basis for the drawings referred to in Exhibit F. We sent Ohl the letter Exhibit K (submitted herewith) with reference to the measurements of the foundation the Smith Company was supposed to build for the machine, having received from Ohl a blueprint setting plan. We wrote Ohl (Exhibit L) as follows:

[fol. 21] EXHIBIT L

The A. L. Smith Iron Works, 217-233 Everett Ave., Chelsea, Mass.

January 12, 1926.

Geo. A. Ohl Co., 151 Oraton St., Newark, N. J.

GENTLEMAN: Please proceed to manufacture five (5) sets of dies for our riser, Type A, U. S. standard gauge No. 11, 6′–2″ long, as per full sized drawings (in duplicate enclosed). Also please manufacture a set of dies to bend material at ninety degrees the full length of the machine.

It is of course important that these dies be shipped at the same time with the machine as we are ready to set the machine on its foundation and get it going as soon as it arrives.

Thanking you for your cooperation and courtesies extended to us, we remain.

Very truly yours, The A. L. Smith Iron Works, by H. A. Lerner, Vice-President. S.

HAL:SS. Enc.

The blueprints referred to in Exhibit L show a cross section of "Riser. Type A, U. S. Std. Gauge No. 11, Dies 6′ 2″ long."

Those risers were made under a patented arrangement for No. 11 or 12 gauge sheet steel about ⅛ inch thick which was the steel I referred to that this machine was to bend. My company received a letter from Ohl (Exhibit O) as follows:

EXHIBIT O

January 19, 1926.

A. L. Smith Iron Works, 217–233 Everett Ave., Chelsea, Mass.

Re our order #23687

GENTLEMEN: Replying to yours of the 12th inst., we are enclosing herewith acknowledgment of your order for the five sets of Unannealed Tool Steel Dies for your Stair riser, and also one set machinery steel Standard Heavy Square Dies, #150A/151A, with tool steel inserts, 12′ 2″ long, as [fol. 22] per our blueprint #490, these dies to be 2¼″ across the corners of the female.

We are also enclosing our drawings #5190A, 5191A, 5192A, and #5193A, showing the dies exactly as we will make them, and should you desire any changes, it will be necessary for you to advise us immediately.

As the terms on this order are one-quarter with order, one-quarter when dies are shipped and the balance by ten thirty day notes with interest at 6% per annum, and our regular agreement to be signed, we will thank you to kindly send us your check for $250.00, which we believe is approximately one quarter of the total cost of these dies, as per our letter of December 14th.

Awaiting your further orders, we are

Very truly, Geo. A. Ohl & Company.

ENC/FJW:TJ.

Two sets of dies are referred to in the correspondence. The square on 90 degree die designed and furnished by Ohl was in the machine when the machine broke. The sets of dies consists of a male and female, the male fitting in to the female which rests on the lower bed of the machine as illustrated in Exhibit P (submitted herewith) referred to in

Exhibit O. The measurement of dies across the corners of the female is illustrated in Exhibit P by the dimension 2¼″ appearing on dies No. 150A and No. 151A. I sent Ohl Exhibit Q as follows:

EXHIBIT Q

The A. L. Smith Iron Works 217-233 Everett Ave., Chelsea, Mass.

January 30, 1926.

Geo. A. Ohl Co., 151 Oraton St., Newark, N. J.

Att. Mr. Wepler.

GENTLEMEN: Please advise by return mail how you are getting along on our machine. Have you started putting it together by now? According to the time your foreman gave us we believe you are putting it together now, and if so, when will the machine be ready so that we can arrange [fol. 23] to have our machinist out there to see it in operation, and possibly so see it taken apart.

Very truly yours, The A. L. Smith Iron Works, by Arthur L. Smith, President. S.

ALS:SS.

Mr. Hovasse was the machinist referred to in the letter and ultimately went to the Ohl plant. I received Exhibit R from Ohl as follows:

EXHIBIT R

February 1st, 1926.

A. L. Smith Iron Works, 217 Everett Ave., Chelsea, Mass.

Att. H. A. Lerner. Our order #23557

GENTLEMEN: In answer to yours of the 9th ult., the distance between the front holes on the large Press which is now finished is 13′ 9″, and the same distance between the rear holes. The distance between the holes on the left leg is 7′ 6¾″, and the same distance between the holes on the right leg. Your measurements are off 2″, which we do not

think will do any harm, as the 4" pipe allows that much leeway.

Mr. Smith promised to send circulars and quotations of certain machinery manufacturers, but, as yet, has failed to do so.

Very truly yours, Geo. A. Ohl & Company.

GAO. Jr.-S.

My company later received Exhibit- S and T as follows:

EXHIBIT S

February 2nd, 1926.

The A. L. Smith Iron Works, 217 Everett Ave., Chelsea, Mass.

Att. Arthur L. Smith. Re our order #23557-Press; our order #23687-Dies

GENTLEMEN: In answer to yours of the 30th ult., the Press is now standing and they are reaming out the holes and putting in the large bolts, while three other machinists are finishing up the large shaft with its keyways and gears, fitting keys, etc. We think the shaft will be in its place within a week and the Press should be running within two weeks.

[fol. 24] We still have not received the quotations, circulars, etc., as promised.

Very truly yours, Geo. A. Ohl & Company.

GAO. Jr.-S.

EXHIBIT T

A. L. Smith Iron Works, Everett, Ave., Chelsea, Mass.

Re our order #23557

GENTLEMEN: We expect to have the large Press running sometime next week and will give you several days notice.

We would like to run this Press several days testing out a lot of Dies, which will be a good thing for the machine.

Very truly yours, Geo. A. Ohl & Company.

GAO. Jr.-S.

I sent a telegram (T-2) as follows:

EXHIBIT T-2

1926 Feb. 19, 9:31, Chelsea, Mass.

George A. Ohl and Co., 151 Oraton St., Newark, N. J.:

May we send machinist first of week please wire.

A. L. Smith Iron Works.

and received a telegram in answer (T-3) as follows:

EXHIBIT T-3

Feb. 19th, 1926.

A. L. Smith Iron Works, Chelsea, Mass.:

Yes—Tuesday morning.

Geo. A. Ohl & Co., Newark, N. J.

Charles Hovasse was the machinist referred to in the first telegram.

Hovasse and I went to the plant on Tuesday morning and first met Mr. Ohl. I talked with him and said we came down to see the machine in operation and I believe he said, "Come along. It's ready," or, "It is being about completed." He took us to his plant, and I think he said something to Mr. Hovasse about the oiling. He took us where the machine was being assembled and left us there. We stayed there all the forenoon. I introduced Mr. Hovasse and Mr. Ohl when we first met.

[fol. 25] "A. As my master mechanic—that I wanted him to get all the information as to how to operate the machine and see it taken apart so he can familiarize himself with it and be able to set it up properly."

This machine was to be taken apart, loaded, shipped to Chelsea and set up at our plant under Mr. Hovasse's direction. I told Mr. Ohl my purpose in getting Mr. Hovasse over there was to be sure that he familiarized himself with all the workings of the machine and be able to do the right thing setting it up. It was something we had never handled before. We left the plant about noontime, Hovasse leaving before I did. The machine was all set up except for the

motor platform. They belted machine from the motor on the floor and demonstrated the use of the machine for us, using their own power plant as the motor was not installed on the machine. They made a stair riser and tread on the machine.

"Q. 10. Some work was done on the machine that morning on one-eighth inch material?

A. Yes, sir.

Mr. Friedman: Now, Mr. Gallagher, I am going to ask you not to put words in his mouth. He didn't say that the work was done that morning on a one-eighth inch.

The Court: Proceed, Mr. Gallagher.

Q. 11. Now continue.

A. Tell my own story?

Q. 12. What was done then, not what was said. Just what was done?

A. What was said or done?

Q. 13. What was done?

A. Mr. Ohl's man, the super, I guess, or the man who had charge of putting the machine together, brought a sheet of iron, straight, which would probably be about approximately, well, perhaps 24 or 25 inches wide, and it was either five or six feet long, I don't remember the exact length—anyway, it was long enough according to the die that was made—and the die was six feet two if my memory serves me right in writing that letter—and they made a riser like this. This is only four inches. They made a riser about five to six feet long, riser and tread.

Q. 14. Of what thickness of material?

A. One-eighth.

[fol. 26] Mr. Friedman: I didn't catch whether you said they made a riser or a riser and tread.

The Witness: They made a riser and tread. This (indicating) is called a riser and tread. It is all one, but there is two; there is a riser and a tread.

Mr. Friedman: That is all right. I didn't understand.

Q. 15. Go ahead.

A. When they began to form this material, I don't remember at what stage they had it done, but I know the machine was stuck. Their own man of course adjusted

the dies to form this material and it didn't work very well because it seems that every time the machine came down they noticed then there was quite a deflection in the bed. We called the bottom bed that receives the bottom die the female die.

Q. 16. By 'bed' you mean the lower end of the machine?

A. The lower end of the casting. I think it is a 13-ton piece of casting.

Q. 17. By deflection in the center you mean what?

A. That machine came down and the metal in that big bed bent in the middle. So, the result was that they had to go down several times, perhaps 15 or 20 times, to form that. Of course, I made allowances, they were just trying out the machine. At one time, I can't remember whether it was bending this end or this end in here [indicating], but the machine got struck.

Q. 18. Yes.

A. I know they had to apply. They first tried it by hand with great big bars, to get the machine out of center. When the machine got in center that is where it got stuck so they tried it by hand and didn't succeed, so they attached some power to the pulley, from their own power. I can't remember exactly how. Anyway, to let the work—oh, yes, they brought the crane in. They have a big crane in their plant, big enough to handle all those heavy castings, and there is a man that rides around in that crane at the top. It is a traveling crane. They brought the crane over and attached one of the ends of the hook of the crane, attached it to the flywheel and after a time succeeded in loosening up the machine.

Q. 19. How long did it take them?

[fol. 27] A. I should think they were probably half an hour on that problem. That was quite a problem when the machine got stuck."

The machine was not on a foundation but was resting on timber. I went back to the plant the next day with Hovasse and saw Ohl. I stayed only a little while and left Hovasse there. No tests were made of the machine while I was there that day. I came back to the Chelsea shop and after Hovasse returned I talked with him. I received Exhibit U from Ohl as follows:

EXHIBIT U

February 27th, 1926.

The A. L. Smith Iron Works, 217-233 Everett Ave., Chelsea, Mass.

Re our orders #23557 & #23687

GENTLEMEN: Your 12′ 6″—103,000 lb. Press is now being loaded and the first car, we expect will go forward on Monday, March 1st, and the second car, containing the balance of the Press and the dies, will go forward the following day, as your Mr. Hovasse found the machine and dies satisfactory after testing same and instructed us to make shipment.

We have figured the Dies on order #23687 and they will cost as below:

Unannealed Tool Steel Dies

One Set #1400A/1401A, 6′ 2″ long	$144.40
One Set #1402A/1403A, 6′ 2″ long	$179.63
One Set #1404A/1405A, 6′ 2″ long	$194.33
One Set #1406A/1407A, 6′ 2″ long	$182.53
One Set #1408A/1409A, 6′ 2″ long	$228.50

Machinery Steel Std. Heavy Square Dies

One Set #150A/151A, 12′ 2″ long	$285.29

Making a total of $1214.68 for the dies and $10,795. for the Standard 12′ 6″ Power Press or Brake, weight about 103,000 lbs. with cast iron motor bracket, rawhide motor pinion, combination cut gear flywheel and one-thirty H. P. Fairbanks Morse-1200 R.P.M. motor and compensator but without base rails or pulleys, making total amount of your order $12,-009.68, $2,000. of which has been paid, and as per our agree-[fol. 28] ment you are to sign 18-30 day notes with interest at 6% per annum for the balance. Seventeen notes to be for $556. each and one note for $557.68, all with interest at 6% per annum. You are also to sign a Conditional Lease. We have asked our attorney, Mr. George A. Shannon of #18 Tremont Street, Boston, Mass., to get in touch with you in reference to signing these notes and the Conditional Lease.

He will hand you the bills of lading after lease and notes have been properly executed.

Awaiting your further orders, we remain,

Very truly yours, Geo. A. Ohl & Co.

FJW:GK.

The Hovasse referred to in the letter is our machinist. After I received the letter I made enquiries of Hovasse.

We wrote Ohl (Exhibit V) as follows:

EXHIBIT V

The A. L. Smith Iron Works, 217-233 Everett Ave., Chelsea, Mass.

March 2, 1926.

Geo. A. Ohl & Co., 151 Oraton Street, Newark, N. J.

GENTLEMEN: In reply to your letter of February 27th, we find that you have not given us credit for our check of January 21st—$250.00, making a total paid you to date of $2,250.00 and a total due of $9759.68.

Will you please change your notes to correspond. It would be satisfactory to us if you would give us credit on the first note for this $250.00, or you can divide it up between the seventeen notes.

Very truly yours, The A. L. Smith Iron Works, by N. Nankin.

NN:SS

We received Exhibit W from Ohl as follows:

[fol. 29] EXHIBIT W

March 3rd, 1926.

The A. L. Smith Iron Works, 217-233 Everett Ave., Chelsea, Mass.

Re Our Orders #23557, #23687

GENTLEMEN: We find that you are correct in stating that we did not give you credit for your check for $250.00 which we received on January 22nd, making a total amount paid of $2,250.00, and leaving a balance of $9,759.68 for which you are to sign eighteen thirty-day notes, the first note for $545.68 and seventeen notes for $542.00 each, all with in-

terest at 6% per annum, and you are also to sign a conditional lease or agreement, all of which will be taken care of by our attorney, Mr. George A. Shannon of 18 Tremont St., Boston.

The first car, Erie #19459, was shipped yesterday and the second car, Erie #96805, containing the balance of the press and all of the dies is now loaded and will be taken off our siding this afternoon.

We enclose blueprint and letter of instructions for your machinist's guidance in erecting this Power Press or Brake.

Be sure to have your erecting machinist set up this machine to stand perfectly level and keep it well oiled, oiling at least three or four times a day for the first few weeks so as to allow all bearings to wear smooth.

Your machinist should wipe off all dirt and file off any burrs found on the contact surfaces of the Press pieces, and all nuts, screws, bolts, shafts, etc. should be given a liberal application of oil during the erection.

Be sure to have your electrician wire up the machine to have the flywheel revolve in the direction as indicated on the enclosed blueprint.

We tested out your Press thoroughly before shipment and feel confident that you will be well pleased with the same.

Yours very truly, Geo. A. Ohl & Company.

ENC. FJW:TJ.

[fol. 30] We received Exhibit X (submitted herewith) from Ohl.

Between receipt of Exhibit W of March 3d and signing Exhibit A, dated March 1st, I talked several times with Mr. Shannon. The contract first submitted by him did not have the guarantee attached to it, which is the rider attached to Exhibit A, and Ohl's signature was in typewriting. When the agreement was later offered me it had Ohl's signature in satisfactory form and had the guarantee attached and I then signed the papers. "I think the second time I signed them—either the second or the third time. I think at least it went once back and it might have gone back twice."

Hovasse can better tell when the machine was set up and ready for work and when operations began. I can only

tell about that from the letters. Hovasse can also tell better than I about troubles with machine.

We wrote Ohl (Exhibit CC) as follows:

EXHIBIT CC

The A. L. Smith Iron Works

Office and Works: Chelsea, Mass.

June 25, 1926.

Geo. A. Ohl Co., 151 Oraton St., Newark, N. J.

GENTLEMEN: We are very much concerned over the fact that the power brake which we bought from you is giving us considerable trouble as the fly wheel bearings and disc get very hot, and although we are using a considerable amount of oil we still find it necessary to shut it down several times a day to cool the bearings off.

It is a very serious matter with us and we would like to have you send one of your experts to look the situation over.

Yours very truly, The A. L. Smith Iron Works, by
H. A. Lerner, Vice-President.

HAL:SS.

"Q. 20. Now is the trouble with this bearing something that came under your eye continually or under the eye of Hovasse?

A. Under the eye of Hovasse.

[fol. 31] Q. 21. Then he can tell us more to help us?

A. Of course, he would tell me everything that happened, but he knows more about the mechanical end of it than I do.

Q. 21a. Did you try any three-eighths steel bending or forming in the machine up to this date, June 25?

A. I don't believe so.

Q. 22. So far as you know, you did not?

A. No, sir.

Q. 23. So the trouble experienced up to that date resulted from work on steel of lower dimensions?

A. Lighter material."

We received Exhibit DD from Ohl in answer.

EXHIBIT DD.

June 28th, 1926.

The A. L. Smith Iron Works, Chelsea, Mass.

Att. H. A. Lerner. Our order #23557

GENTLEMEN: In answer to yours of the 25th inst., we have never had any complaint from the many customers having this same type and capacity machine as you.

Any ordinary machinist should be able to take down the flywheel shaft, clean out the bearings with kerosene, clean out the oil holes and the flywheel roller bearing, and then put the parts back in place, using vaseline or a good grade grease in the flywheel roller bearing and a good lard or machinery oil in the other bearings which have phosphor bronze bushings. It seems evident you are using an inferior grade of oil instead of a good lard oil, or, it is possible there was some dirt in the bearing when your machinist put the machine together. We can be of no assistance to you other than what your local machinist can do if he knows his business and is not an automobile mechanic. Please have such a machinist follow our instruction as above and then report to us, as we surely wish to advise and help you and hope your press hand will keep this machine properly oiled with a first class oil.

We await your reply.

Very truly yours, Geo. A. Ohl & Company.

GAO. Jr.-S.

Charles Hovasse was the machinist who supervised this matter. From what he told me I understood he had been a [fol. 32] machinist all his lifetime. He has been with us about fifteen years.

I wrote Ohl (Exhibit EE) as follows:

EXHIBIT EE

The A. L. Smith Iron Works

Office and Works: Chelsea, Mass.

August 13, 1926.

George A. Ohl & Company, 151-161 Oraton Street, Newark, N. J.

GENTLEMEN: We have yours of June 28th, 1926 in response to ours of the 25th of June. We refrained from

writing you since then in the hope that the power press in question would render satisfactory service. We had taken all the precautions suggested in your letter, both before and since its receipt and have been as indulgent as we reasonably could be under the circumstances. Payments have been continued in the hope that the machine would perform as per your guarantee. But it is obvious now that it cannot accomplish what the specifications call for. Moreover we have been to great expense and at some loss by reason of the deficiencies of the press.

While we have obligated ourselves to pay for the machine in accordance with the terms of our contract and have already paid $4,963.68 patiently awaiting better results we cannot believe that we would be required to continue to pay and not have the full benefit of what we are paying for and what you have agreed to sell us.

We have therefore concluded to refrain from making further payments until the press is put into the condition required by the specifications and your guarantee.

If you care to avail yourselves of this simple method by which to preserve friendly relations between us we gladly offer you the opportunity providing that you comply at once and not by merely giving us needless instructions by mail.

We would not be apt to buy a $12,000 machine for the mere sake of making payments to you and abusing the ma-
[fol. 33] chine. We bought a machine in order to facilitate our production.

If, however, our suggestion is not acted upon our only alternative will be to refer the matter to our attorney and have him advise us as to all our rights, whatever they may be. We trust that this may not be necessary. What we want is a workable machine and not controversy if we can avoid it by reasonable concessions.

Yours very truly, The A. L. Smith Iron Works, by Arthur L. Smith, President.

ALS:N.

We received from him the following:

EXHIBIT FF

August 16th, 1926.

The A. L. Smith Iron Works, Chelsea, Mass.

Att. A. L. Smith. Our order #23557

GENTLEMEN: In answer to yours of the 13th inst., we are willing to prove we gave you a first class machine, and we cannot understand what you are trying to get at, but assure you we will stand for no excuses with reference to the payment of this machine shipped you March 1st, 1926.

Your statement in your letter of June 25th that "the flywheel bearings and disc get very hot" shows you are not using the proper oil, and, possible since the shaft is cut, it will always get hot unless you have the shaft trued up or put in a new one. Any machine not properly oiled will cause trouble, which is not up to the manufacturer however.

We have over two thousand of these machines throughout the United States among the different sheet metal workers, many being the same size and type as yours, but we have not received a single complaint from any of them. Last week we received an order from the Shaw-Walker Company for their third press similar to yours, and are also building two more of the same type for other customers, but they would not find fault with us if their flywheel bear-[fol. 34] ings should get hot, and we feel you are simply offering an excuse, as surely any ordinary machinist can take off the flywheel, clean out the dirt with kerosene, and, after everything is in its proper place and nicely cleaned, burrs filed off, use a good machinery oil which will lubricate and not gum.

We have many machines in our shop, but we do not ask the manufacturer to call here free of charge and tell us what any trouble might be in case a flywheel got hot. We know there are many first class machinists in Boston (no automobile mechanic) whom you can call in to examine your Press to prove carelessness has caused the trouble.

With reference to your statement about purchasing a $12,000.00 machine, we assure you we saved you over $3000.00 on the special low quotation given you, and, just

because the flywheel gets hot, is no excuse for you to claim you "cannot facilitate your production." A flywheel getting hot has nothing to do with results, no more than your motor burning out, etc., and no mechanic would accept your excuse.

We insist that you pay your notes or other proceedings shall be taken.

Very truly yours, Geo. A. Ohl & Company.

GAO. Jr.-S.

EXHIBIT GG

August 16th, 1925.

The A. L. Smith Iron Works, Chelsea, Mass.

Att. A. L. Smith. Our order #23559

GENTLEMEN: In addition to our letter of the 16th inst., we call your attention to the fact that the two wooden brakes may require adjusting so that they both grab the brake disc casting immediately and hold same fast without any slipping. If the wood is worn the friction disc will slip and become hot, and the heat will burn the oil in the bearings and in the flywheel.

Very truly yours, Geo. A. Ohl & Company.

GAO. Jr.-S.

During this period Hovasse and others of the company were in closer touch with the work than I was.

[fol. 35] We received from Ohl Exhibit HH as follows:

EXHIBIT HH

August 20th, 1926.

The A. L. Smith Iron Works, Chelsea, Mass.

Att. A. L. Smith

GENTLEMEN: The Boston Engineering Company of Boston reports there is a "play in the shaft caused by the thrust ring being worn, which part has to be renewed."

This proves that you have not properly oiled your Press or the parts would not wear, and no such wear has taken

place in any of the similar Presses sold to our different customers, some of the machines being run over fifteen years.

It seems you require the services of a good mechanic to occasionally look after your Press, which, of course, is not up to us, and the expense of the Boston Engineering Company must be paid by you and not by us. We are shipping two and three Presses every week to different customers, and no such complaint as yours has ever been made, but, they keep their machines properly oiled.

Very truly yours, Geo. A. Ohl & Company.

GAO. Jr.-S.

The Boston Engineering Company there referred to is the Boston concern that was doing some work on the machine at our plant.

Our counsel, Mr. Witte, wrote Mr. Ohl's counsel, Mr. Shannon (Exhibit II), as follows:

EXHIBIT II

August 23, 1926.

George T. Shannon, Esq., 18 Tremont St., Boston, Mass.

DEAR SIR: I am writing with reference to the matter of the A. L. Smith Iron Works in which you are interested on behalf of George A. Ohle and Company. As I said to you this afternoon our chief difficulty is that the machine will not bend ⅜" metal without a material deflection, so that when we do succeed in bending a given piece of ⅜" it re-
[fol. 36] quires a lot of man-power after each operation to recover the metal from deflection.

Your client's contract carried a rider guaranteeing the workmanlike performance of the machine in accordance with the specifications therein enumerated, one of which is the capability of the machine to do what I speak of without the necessity of the after work. If we have to continue to use machine in this condition it will cost us more than if we never had the machine at all; in fact we have been put to considerable loss already. Incidentally I might add that your clients are under the mistaken impression that the only difficulty is with what is known as the clutch which was removed by some men that you sent to our factory the

other day. That is by no means the only and the most serious trouble. What I have described above is the principal difficulty.

My proposal, therefore, is that we will take the clutch back from the place where it now is and restore it to the machine and will then make such changes in the machine as we deem essential to its proper operation in accordance with the specifications, and we will see that that is done at a most economical cost and whatever the bill may be we shall expect your clients to meet it.

We should be glad before we start on the work, which must be done without any serious delay, if one of your client's representatives would call at our plant, to give him an ocular demonstration of just what our difficulties have been and still are. If such a representative calls we hope it will be within the next few days since we cannot lose any more time.

I need not add that so far as you are concerned I deeply appreciate your courtesy and kind treatment.

Yours truly, Martin Witte.

Signed in the absence of Mr. Witte.

"Q. 24. It says it requires a lot of man-power to recover the metal?

A. Yes, to bring it back and straighten it out.

[fol. 37] Q. 25. How is that done where you have that deflection?

A. In most cases we have to keep bringing the machine down several times, perhaps a half a dozen times in some cases, in order to have a bend fairly square, and after that we had to do a lot of straightening, which meant work by hand.

Q. 26. Now, in the case of bending by an efficient die that is working on a machine that is working—is that bending properly done in one operation?

A. Yes, sir.

Q. 27. What you mean is for a ten-foot piece of metal where there is a deflection, you have to put it in the machine again?

A. And again.

Q. 28. And again?

A. And again and again.

Q. 29. Until you get the bend out?

A. Yes. This material wasn't straight and it had to be taken on an iron block and straightened out by hand with hammers.

Q. 30. That causes additional time and expense?

A. Why, straightening would take in some cases four or five times the amount of time it would to bend it, and more too."

Hovasse sent Ohl Exhibit JJ as follows:

EXHIBIT JJ

The A. L. Smith Iron Works

Office and Works: Chelsea, Mass.

August 25, 1926.

Geo. A. Ohl Co., 151 Oraton St., Newark, N. J.

GENTLEMEN: I have read the letter you wrote to Mr. Shannon on the 20th stating that Mr. Smith received the machine after running in your factory, etc., and that because the brass ring was worn was an indication of oil neglect on our part, and that you would not pay the bill.

After trying out the machine for five days and stopping on the job I got the clutch assemble back with only the clutch throw removed and brake badly broken from Boston Engineering. I took the whole thing apart for the first time since assembled at your factory. I found that the bushion 16 in. long in housing #2 was a poor loose fit and turned around. The one bronze roller retainer was broken [fol. 38] in three pieces with only two screws in the other, etc.

Enclosed is a sample of one of five that I found in the roller bearing itself with a lot of chips like sample. This stuff was assembled with bearing without a doubt because even the missing screws in bronze could not get by roller ends.

Mr. Smith being away on his vacation I have taken it upon myself to get this machine running.

I would suggest that you send your manager who I met before. I think that he could see that neglect of someone in your machine shop is the cause of all the trouble. Your

man could take a night train or boat and get here in the morning, stay one hour and see for himself enough to report to you the same afternoon.

This machine will be down Thursday and Friday while I am making repairs on brake, new rings, bushions, etc.

Don't form conclusions—seeing is believing.

Very truly yours, The A. L. Smith Iron Works, by Chas. Hovasse, Master Mechanic.

CH:SS.

We received Exhibit KK from Ohl in answer as follows:

EXHIBIT KK

August 26th, 1926.

A. L. Smith Iron Works, Chelsea, Mass.

Att. Chas. Hovasse

GENTLEMEN: Your letter of the 25th inst. received, and it proves that your machine has not been properly oiled or the brass bushings would not turn in their bearings, as these bushings are driven in with great pressure by two men.

We furnish an American roller bearing which is the best bearing for this purpose, and, if the bronze roller retainer was broken, it again proves it became dry and no oil was used. The small sample of steel sent us proves conclusively that the roller bearing has been running dry, and it is no wonder the bronze flanges were damaged. We have [fol. 39] too many machines of this type throughout the country and none are giving any trouble.

If you do not have the proper foundation under your Press as shown by the blueprint sent you, that is no fault of ours.

We did not agree to keep your machine in repair when your workmen became careless. You accepted the Press at your shop after you had seen it running for almost an entire day and saw samples formed, and you signed an acceptance which we have in our files.

Kindly advise us what damage was done by the Boston Engineering Company as mentioned in the second paragraph of your letter.

Very truly yours, Geo. A. Ohl & Company.

GAO. Jr.-S.

Our counsel, Mr. Witte, received Exhibit LL from Ohl as follows:

EXHIBIT LL

August 28th, 1928.

Martin Witte, 18 Tremont St., Boston, Mass.

Re A. L. Smith Iron Works

DEAR SIR: In answer to yours of the 23rd inst., it is evident you are not acquainted with any of the details of the machine in question.

This Power Press will bend 3/8" material, and we will bend 7/16", depending upon the width of the Dies. Of course, the machine will not bend 3/8" material on narrow dies, which any mechanic would know.

Referring to the deflection, there is no machine of this type made which will not deflect in the center, and we never guaranteed there would be no deflection. This Press was thoroughly tested at our shop before shipment was made, and the master mechanic of above firm was here almost an entire day and saw it running and saw different samples formed and gave us a signed written acceptance which we have in our files, and we do not propose to stand for any excuses from your client who evidently has neglected to properly oil the machine or the bronze bushings would not revolve in their bearings, or the bronze flanges (called roller retainers) [fol. 40] would not chip or show particles of bronze which had been ground off, all due because the bearings were not properly oiled.

Referring to the second paragraph of your letter relative to expense being more than if they never purchased the machine at all, is school boy talk as we have over one thousand of these machines throughout the United States, many in your immediate vicinity, which are giving entire satisfaction, which we can prove.

We do not propose to furnish brains or keep this Press in repairs no more than, when we have accidents through carelessness with the machines in our shop, we would not expect the manufacturer to come and make repairs.

They first complain about the bracket getting hot, and mention nothing of the clutch, which is entirely different, and now they complain of something else. Since they com-

plain about the clutch, please mention what the trouble seems to be, referring to blueprint #1052 showing the different parts of the 25" clutch used on this Press. Your proposal about "taking the clutch back from the place where it now is and restore it to the machine, and you will then make such changes in the machine as you deem essential to its proper operation," is a very peculiar statement, and we do not care to have you or your client design our machines as they are now designed by us after sixty years experience. And we do not propose to have you foster any bills on us as mentioned in the third paragraph of your letter.

As mentioned above, both Mr. Smith and his master mechanic were at our plant several times during the erection of this Press, spending an almost entire day here just before shipment and saw the machine in operation and saw samples formed, after which they gave us a written acceptance. In fact, we would not ship any machine without same being thoroughly tested and found satisfactory, and we are shipping two and three Presses every week.

We feel this is nothing but a hold-up and we will not stand [fol. 41] for it, and, when the notes are due, no doubt the holders of the same will take steps if the notes are not paid.

Very truly yours, Geo. A. Ohl & Company.

GO. Jr.-S.

Mr. Witte answered by Exhibit MM as follows:

EXHIBIT MM

Martin Witte, 18 Tremont Street, Boston, Mass.

September 3, 1926.

George A. Ohle & Company, 151-161 Oraton Street, Newark, *Newark,* N. J.

DEAR SIRS: I have your letter of August 26th with reference to the matter of A. L. Smith Iron Works and I regret very much that you have so little co*d*fidence in my ability to understand the English language.

Notwithstanding the fact that I am but a mere lawyer I have been able, after more or less explanation to grasp the difficulties with the machine in controversy. I have stated my position and that of my client in my letter to Mr. Shan-

non, your attorney, and I am very confident that what I have said there can be substantiated. Having read your correspondence with the Smith Iron Works and having now seen a sample of it myself I am satisfied that further correspondence will be of no avail. I have advised my clients to put the machine in a condition which will at least approximate your written warranty and intend to charge their damage and loss against you.

I repeat, however, that if you desire, instead of writing letters, to do *to* the job yourselves (and I have made it clear to you what the principal trouble is) you may still have that opportunity, unless the Smith Iron Works have already begun the necessary work.

Very truly yours, Martin Witte.

k. dbnr.

I did not sign a written acceptance for the machine.

Mr. Witte received Exhibit NN from Ohl as follows:

[fol. 42] EXHIBIT NN

September 8th, 1926.

Martin Witte, 18 Tremont St., Boston, Mass.

Re A. L. Smith Iron Works

DEAR SIR: Your letter of the 3rd inst. to hand, and it further proves you do not know the first thing about a piece of machinery.

We might advise you that we have had our expert on the job who made an examination and found exactly the cause of the heating after the machine had been running six months. Since you have read the correspondence of the Smith Iron Works and you know all about the matter, we possibly in the future will be able to prove to you there are many items and details you have over-looked.

We wish to be fair in this matter and respect Mr. Smith, but we do not propose to stand for any expenses after our contract was carried out and we furnished a machine exactly as referred to in our circular, blueprint, specification and quotation, as the machine was thoroughly tested and accepted before shipment was made. We did not contract to furnish any repairs, and such repairs sometimes

are necessary, but, of course, the customer pays for such repairs. We would not think of taking steps such as you have toward the manufacturer when something happens to any of our lathes, planes, drills, etc.

We have a written report, evidence, affidavits, correspondence and signed papers, and assure you we will go the limit since you have taken the stand as shown by your letters, and possibly you will be a good expert for your client with reference to what the machine should or should not do, and the writer will have a chance to cross-examine you.

There is no press in the world which will not deflect, and we think you will be a poor witness and your advice has been wrongfully given. We do not believe you know the first thing about the trouble, which we have found out and is not up to us.

[fol. 43] Pardon the sharp language which we feel is necessary from the stand you have taken.

Very truly yours, Geo. A. Ohl & Company.

GAO. Jr.-S.

We received Exhibits OO and PP as follows:

EXHIBIT OO

September 14th, 1926.

The A. L. Smith Iron Works, Chelsea, Mass.

Att. Mr. Smith

GENTLEMEN: We are writing many customers having same type and capacity Power Press as yours and find they are all pleased with the machine and have had no trouble with the flywheel shaft, flywheel roller bearings, phosphor bronze bushings or any other part as claimed by you.

A roller bearing in the housing which we understand is an idea of your master mechanic is not advisable on account of the strain on the rawhide gear, and we would never put in such bearing in the housing after having sixty years' experience of this kind.

We have just received word from the Penna. Railroad Company's Altoona shops that they never had any trouble with their Press of exactly the same type and capacity as yours, which they purchased from us in 1913, and they are easily bending 3/8" soft steel. Their Press only weighed

103,000 lbs. while yours weighs 108,506. In other words, we made you a present of 5506 lbs. casting, which, of course, makes a stronger machine than our standard Press.

We can assure you we are not pleased with the trouble you are causing us which is all due to not properly oiling either the bearings or some other part of the flywheel shaft, and such small repairs were up to you and not us.

We hope it will not be necessary for us to sue you and take away the Press as you surely do not have a leg to stand on, no matter what your Attorney advises you.

Very truly yours, Geo. A. Ohl & Company.

GAO. Jr.-S.

[fol. 44] EXHIBIT PP

September 22nd, 1926.

A. L. Smith Iron Works, Chelsea, Mass.

Att. Mr. Smith

GENTLEMEN: We have just received word from the New York Central Railroad Company that they never had any trouble with their Power Presses or Brakes which are exactly the same type as you purchased, the opening in housing being 42″ the same as yours and capacity 3/8″ soft steel.

From time to time we shall give you such information as above to prove that we gave you a first class machine of first class design, and material and workmanship of the best. The last Press shipped the above firm was October 1st, 1923.

Very truly yours, Geo. A. Ohl & Company.

GAO. Jr.-S.

Mr. H. A. Lerner was in charge of the cost work in the plant and he is the person who can testify with respect to the additional cost involved, as the result of the operation of the machine.

On cross-examination Mr. Smith testified as follows:

"I am general manager of the A. L. Smith Iron Works, know what is going on through reports to me; am generally there early in the morning, going through the plant, meeting and talking with the various department heads. I do not direct the manufacturing. I go outside and get orders."

"X Q. 31. And I understood you to say that you are not a practical machinist?

A. I beg to differ with you on that.

X Q. 32. You are a practical machinist?

A. Yes, sir. No, I wouldn't say a machinist. In my line of work I have started from the bottom and have worked at it since I was 13 years of age."

Before dealing with Ohl we had been building stairs and doing all sorts of structural and ornamental iron works, sending some of it out to be fabricated to various places including the Penn Metal Company in Cambridge. I think we used to buy treads and risers from them. I had been at their plant once or twice where I saw one or more Ohl presses used to produce risers and treads only. I first saw the Ohl [fol. 45] presses there six months, possibly a year, before I bought an Ohl press. I do not think I saw it in operation. I saw an Ohl press, similar to ours, in operation in Brooklyn, New York, before I bought one. We had been shaping material at our plant for years using different methods, using présses but not of the same nature and not doing the kind of work of the press in question.

I started this transaction by asking for a quotation on Ohl presses from a Boston broker and got in touch with Ohl after hearing from the broker. I then went to see Ohl at Newark. I had with me some blueprints showing the kind of work we were trying to do in developing a new tread and riser, one of our patented articles, which I showed to Ohl.

"X Q. 33. I just asked to give the conversation.

A. What do you want me to tell?

X Q. 34. The conversation you had with Mr. Ohl in Newark.

A. I told Mr. Ohl, and I had prints with me, of what I wanted the machine to do. I explained to him how we did some of the work prior to that. I wanted it done by machine so as to cut the cost of our labor down.

X Q. 35. Was anyone with you?

A. No, sir, just Mr. Ohl was there. I believe I had made my views quite clear to Mr. Ohl what I wanted. You stop me if you think I am going too fast.

X Q. 36. All I am asking of you is to just give the conversation between yourself and Mr. Ohl.

A. But you don't expect me very definitely to remember three or four years ago how it happened.

X Q. 37. Give it to me as best you recollect it.

A. All right. I have already said it, I believe, that I had the blueprints with me and showed Mr. Ohl the kind of riser and tread—that laying down there on the floor [indicating], I had a blueprint of that. I had a blueprint of stringer material. I told him how we wanted the work done so as to save cost, how we did some of the work prior to that, and he undertook to tell me he could build a machine for anything I wanted. He took me through his plant and showed me various machines in process. I believe there was some machine in process of construction [fol. 46] then lighter than mine. He showed me patterns and said anything I asked for I can do it. Of course, I can't remember everything that was said in the natural course of the conversation."

I don't know the exact date but it was just prior to placing the order. I don't think I had any communication with Ohl before I went to his office. I believe I telephoned him from New York to find out whether he was going to be in. I wrote on November 24, 1925, to Ohl (Exhibit B) just after I got back from meeting Mr. Ohl personally, for the first time. I was in Newark just prior to November 24th. I do not recall a prior telephone talk with him. I received from Ohl Exhibit 13, as follows:

EXHIBIT 13

November 9th, 1925.

A. L. Smith, agent, 217 Everett Ave., Chelsea, Mass.

DEAR SIR: Referring to your phone conversation with the writer at 9 o'clock a. m. on the 7th inst., as requested we enclose blueprint showing our standard 12′ 6″—103,000 lb. Power Press or Brake with extra opening in housings 42″ x 16″, and shown geared direct to 30 or 35 h. p. motor 1200 r. p. m.

We also enclose blueprint #331 showing foundation plans, and dimension sheet #46, both of which are for our standard 10′ 6″ 92,000-lb. Press, to the length of which you should add 2′ for correct dimensions for the standard 12′ 6″—103,000 lb. Press. The details and widths of both presses are the same.

Also enclose blueprint #53 showing end view of this Press and extra large opening. Also specifications covering both the 10′ 6″—92,000 lb. and 12′ 6″—103,000 lb. Presses.

We also enclose blue print showing Corrugating Dies for corrugating sheets much quicker and better than a Corrugating Roll, which will measure the same in the centre as on the ends, something which cannot be done on a Corrugating Roll. Also blueprints showing our Punching Attachment to be used in our Power Presses which will punch from one to one hundred rolls in one operation. [fol. 47] We also enclose blueprints #490 and #1053 showing some of our standard Forming dies and some of the products formed on the Presses. We will be glad to quote you prices on any of the above after we receive more information. Forming dies are removed from the Press in about two minutes, and the Punching Attachment in less than five minutes.

We quote you the following prices with the understanding you should add on your commission of 5% or 10%, as, under no circumstances, will we pay any commissions as our prices are very low and about cost price to us, as follows:

1 Standard 10′ 6″ Power Press or Brake, weight about 92000 lbs., (last machine weighed 110,114 lbs.) capacity ⅜″ soft steel on square dies the female of which measures 3″ across the corners, arranged for belt power, special reduced price	$9,200.00
1 Standard 12′ 6″ Power Press or Brake, weight about 103,000 lbs., made from above patterns, arranged for belt power, special reduced price	10,300.00

If geared direct our customers generally purchase a 30 or 35 h. p. motor 1200 r. p. m., and the following extras should be added for each machine:

1 Motor bracket	65.00
1 Rawhide motor pinion	60.00
1 Combination cut gear flywheel	60.00

We refer you to the following firms who are using our heavier type Presses:

Osgood Bradley Car Co., Worcester, Mass.
Taunton-New Bedford Copper Co., Taunton, Mass.

N. Y. Central R. R. Co., West Albany, N. Y.
Sexauer-Lempke Co., Long Island City, N. Y.
Dyle & Bacalan, Bordeaux, France.
Tokio Kentetsu Kaisha Co., Tokyo Japan
Pedlar Mfg. Co., Oshawa, Ont.
[fol. 48] Berger Mfg. Co., Canton, Ohio.
Pressed Steel Car Co., Pittsburgh, Pa.
Willis Mfg. Co., Galesburg, Ills.
J. C. McFarland Co., Laporte, Ind.
Triangle Iron Works, New York City.
Penna. R. R. Co., Albany, N. Y. & Altoona, Pa.
Babcock, Wilcox Co., Bayonne, N. J.
Turl Iron & Steel Co., Newburgh, N. Y.
Blawnox Company, Blawnox, Pa.
C. D. Pruden Corp., Baltimore, Md.

and many others.

Prices f. o. b. our siding Erie railroad, delivery from six to eight weeks after receipt of order, and easy terms arranged, say one-quarter amount with order, one-quarter amount when machine is shipped, and balance in twelve equal monthly payments or notes with 6% interest, and our regular agreement to be signed. If necessary, we will carry the account for six additional months under the same conditions.

Hoping to receive your order, remain,

Very truly yours, Geo. A. Ohl & Company.

Encls. GAO. Jr.-S.

217 Everett Avenue, Chelsea, Mass. is my company's address. I received the letter about its date. I saw the blueprints referred to in the letter at the time but I don't know where they are now. The specifications and blueprints Exhibit 14 were received with that letter of November 9th. The blueprints of that exhibit are submitted herewith. Those specifications were as follows:

Specifications

10′ 6″ Power Press or Brake, capacity ⅜″ soft steel, one bend at a time, on dies the female of which measures 3″ across the corners, weight about 90,000 lbs. Also 12′ 6″ Power Press or Brake, weight about 103,000 lbs. (Made from our Standard Patterns.)

[fol. 49] This machine has been built to meet the demand for a machine which will bend the heavier guages of metal with ease and you can also bring out in fine detail, multiple bends which cannot be successfully accomplished in the lighter machines of this class. The machine is double back geared, proportion of gearing 26 to 1. The main or eccentric shaft 8″ in diameter, is a high carbon steel forging, and is driven at both ends by large cut gears, thus preventing all twist of the machine under the heaviest strains and adding greatly to the smooth operation when worked to its fullest capacity. All bearings in the housings are bored from the solid and brushed with phosphor bronze.

The main shaft is supported in six bearings, one in each housing, and the remaining four bearings are so placed on the top leaf that each eccentric operates between two of them, thereby positively preventing the springing of the shaft under the heaviest pressures. The right and left adjusting screws are high carbon steel forging 6″ in diameter and the entire train of gears for the adjusting motion are cut gears the bevel gears and pinions being the steel with their teeth planed from the solid and not milled. This power adjusting motion is protected by our patented friction frog gear marked "B" on enclosed blueprint, which is adjusted that it will just lift the weight of the slide or hammer, and if the operator adjusts the slide down hard on the dies or up to the extreme limit, this gear will slip and no damage will be caused. Stroke of slide or hammer, 4″, the -termediate driving shaft 4″ in diameter, carries a large cut gear of 7″ face, together with two shrouded driving pinions for the main driving gears. The cut gear on this intermediate shaft is driven by a rawhide pinion which is keyed fast to the flywheel shaft 3 7/16″ in diameter, made of hammer forged steel .30 to .40 carbon. This flywheel shaft is supported in two long bearings bushed with phosphor bronze, one bearing in the housing and the other bearing in the large flywheel bracket. The flywheel 42″ [fol. 50] in diameter for an 8″ belt, weighs about 1,800 lbs, and is fitted with a High Duty Roller Bearing having heat-treated nickle steel rollers and hardened steel bushing on the flywheel shaft so that no wear of the shaft can take place where the flywheel revolves. The main driving clutch is 25″ in diameter with its clutch cheeks fitted with hard-

wood inserts, so that it will not "cut" and at the same time carry the full capacity of the machine without slipping.

The friction disc for operating the power adjusting motion is also lined with hardwood and revolves on bronze bushing. Shifting collars for both clutch and friction disc are made of bronze and accurately fitted in their holding slots. The slide or hammer is provided with end gibs, thereby preventing an end motion of this member and making the machine available for gang punching, blanking and other operations which demand a perfectly true guide to this slide.

To make the interchange of dies from any of our presses to this heavier press possible, we have retained same vise centers, and the die holding slots are also of the same width and depth. The openings in the housings measure 42″ wide by 16″ high, so that long pieces can be formed up in successive operations.

Your attention is called to the heavy ribbing provided at the extreme top of the top leaf, thereby giving this piece a strong I-beam construction and placing the metal at the point of greatest tension. Two ribs have been added at the bottom of the top leaf to prevent all deflection sideways from the strains exerted by the eccentrics. A heavy rib has also been added to the top of the hammer, which in combination with the heavy web and additional truss ribs, gives this piece the stiffest possible construction. The bed or bottom piece also has a very heavy rib at the bottom and truss ribs are also provided, guaranteeing a construction which will not spring under the heaviest pressure it is subjected to.

This Press can also be used as a Gang-punch when fitted [fol. 51] with our gang-punching attachment, and as many as 100 holes can be punched at one time.

All gears on the above Power Press or Brake, are cut gears.

Hammer 19 strokes per minute.

Flywheel 500 Revolutions per minute.

Use 35 horse power motor, 1200 R. P. M.

Use an 8″ belt.

The stroke is 4″, the adjustment 6″ and the opening 13½″ between the top of bed and bottom of hammer, when the adjustment is at its highest and the stroke down.

George A. Ohl & Company, Newark, New Jersey.

I was able to read these blueprints and specifications when I received them. I looked through the blueprints and read the specifications. I may have shown the blueprints and specifications to Hovasse. I generally do consult him on the mechanical work when it comes to buying machines, etc., and my recollection is that I did on this occasion, also probably with Mr. Lerner. I think Mr. Lerner and I, and possibly our secretary, went over these specifications carefully before I ever went to Newark. "I looked at the plans and positively read the specifications. The specifications are the most important, because that tells in detail what it will do." I know I saw him prior to those letters that you have read.

I wrote Ohl (Exhibit 15) as follows:

EXHIBIT 15

The A. L. Smith Iron Works

Office and Works: Chelsea, Mass.

November 18, 1925.

George A. Ohl & Co., 151 Oraton Street, Newark, New Jersey.

GENTLEMEN: Please inform us by return mail or wire if Mr. Ohl will be at the Works Monday next, November 23d. I am planning to be at your Works next Monday providing I hear from you that you will be there.

[fol. 52] Should anything come up that might make it impossible for me to be there I will let you know by wire.

Very truly yours, The A. L. Smith Iron Works, by Arthur L. Smith, President.

ALS: SS.

That referred to my second trip I think. On the second trip I closed the deal with him.

"X Q. 38. Now, will you tell us, please, what happened at the time of the second visit?

A. Well, I think at the second visit I closed my final deal with him.

X Q. 39. I didn't ask you that. The conversation between you and Mr. Ohl—that is, you had had these blue-

prints, you had been down there and you had already seen this machine, and you had been back to Boston?

A. I think one of the conversations at that time was this—because I have had some quotations on the steel machine and also from other companies, and I had asked Mr. Ohl whether his machine was as strong as a steel machine. His answer to that was, 'If I thought the steel machine was any better than a cast iron machine, man alive, I would build one.' That was part of the conversation.

X Q. 40. Now, I want to ask this first: At the time you were down there, at that time, did you talk any of the details, or did you have any of the blueprints before you when you gave the order for that machine?

A. I don't believe it. I don't believe I had. After all, it comes to——

Mr. Gallagher: Now, don't. Please wait.

The Witness: All right.

X Q. 41. Well, can you tell us just what was said when you gave him the order, just how you gave him the order? That is, did you tell him you wanted a 103,000-pound press like he had shown you in the blueprint?

A. I didn't state any——

X Q. 42. Can't you answer that?

A. What I told him? I wanted a machine. Is that all right? That would do my work that I contemplated doing. Is that all right?

X Q. 43. Well, I am asking you to tell us what you said? [fol. 53] A. That is what I tried to tell him. Now, will you please put that question again. I don't like to see us misunderstand each other.

X Q. 44. I ask you only to give us the conversation which took place between you and Mr. Ohl on November 23, 1925, when you went there the second time to his factory, after you had gotten all these blueprints, and all this, and when you closed the business with him?

A. Well, I will try to recollect the best I know how. I told him I wanted a machine that will bend our stringers up to three-eighths.

X Q. 45. You told him that the first time, didn't you, Mr. Smith?

Mr. Gallagher: Wait a moment. Pardon me. May the witness complete his answer?

The Court: Yes, go on.

The Witness: I told him I wanted a machine that will bend material without getting it out of shape, or bending it to shape as per our specifications up to three-eighths of an inch, 12 foot long. That was the most sensible thing because the original machine of Mr. Ohl's was only a 10-foot machine, and this was a 12-foot 6 machine. I am very positive of that. In fact, that is where the conversation came in with Mr. Ohl—'Is your machine as good as a steel machine', because I had conversation with him about a steel machine and that is about the same as Mr. Ohl's press. I was preferring to buy a machine nearer home. The other party, by the way, was out west. I impressed on Mr. Ohl the importance of having a machine that would bend my material up to three-eighths of an inch thick and 12 foot long. That was the most important thing. As I have already mentioned, Mr. Ohl's answer was—I don't know about the exact words, "If I thought a steel machine, after being in business so long, if I thought a steel machine was better than a cast iron machine I would build it out of steel myself." Then, of course, we consummated the sale.

Mr. Friedman: Now, if your Honor please, I ask that all be stricken out.

The Court: I will allow it and save your exception.

X Q. 46. Was anything said in that interview between [fol. 54] you and Mr. Ohl about the specifications that he had sent you to Boston on the 9th of November?

A. I believe that the specifications had been mentioned.

X Q. 47. Did you tell him that those specifications were satisfactory?

A. I don't remember whether I said it in those words, but the specification is satisfactory to me if it will do what it says it will."

When I wrote Exhibit B on November 24, 1925, I had been studying the blueprints received with the November 9th letter for several months and I wanted the machine built as shown in those blueprints. When I received the confirmation (Exhibit D) I or Mr. Lerner checked it and did not see anything incorrect in it. I don't believe we make any claim that it is incorrect. I went to Ohl's fac-

tory once or twice while the machine was being built before my visit there with Hovasse.

I think I had a blueprint of my stair riser with me when I first saw Ohl. I may be mistaken and it may be that I gave it to them for the first time after the order was placed. I am not sure.

The witness was shown Exhibit 16A, as follows:

EXHIBIT 16A

The A. L. Smith Iron Works

November 25, 1925.

Geo. A. Ohl Co., 151 Oraton St., Newark, N. J.

GENTLEMEN: We are sending you herewith print of our stair riser. This will be made in No. 10, No. 12, and No. 14 gauge stock. The longest ever made was 6′ although from 3 to 5′ are the common lengths.

You will note that the tread portion is 1½″ deep. You will also note that the portion marked "nose" between points 4 and 5 we have marked off in two widths. We would like to know whether the nosing can be made as narrow as we show it in red pencil and still retain some flat surface on the "nose". It is also important that at point 4 that the bend be sharp but at point 5 it may be rounded. [fol. 55] We would also like to know how many operations it would be necessary to make to cover all the ten bends.

We understand that Mr. Smith has sent you an order on our behalf for a machine and we want to get the ball rolling in preparation for it.

We would thank you for an early reply.

Very truly yours, The A. L. Smith Iron Works, by H. A. Lerner, Vice-President.

HAL:SS. Enc.

The witness then testified:

That letter was signed by our vice-president, Mr. Lerner, and the blueprints there referred to are of our stair riser and tread. The reference to No. 10, 12 and 14 gauge stock means a little less than ⅛ inch thick. We have not made any stair risers longer than 6 feet on these dies, but we

have made them longer than 6 feet but had not at the date of this letter. After I ordered the machine I gave an order for dies, the widest one being 2¼ inches across the corners of the female die. We bought dies from no one else for this machine.

Exhibit 17 (submitted herewith) is the confirmation of the order for dies we received from Ohl.

We sent Ohl Exhibit 18 as follows:

EXHIBIT 18

The A. L. Smith Iron Works, 217-233 Everett Ave.,
Chelsea, Mass.

January 13, 1926.

George A. Ohl Co., 151 Oraton Street, Newark, N. J.

GENTLEMEN: With reference to the ninety degree die that we ordered in our letter yesterday we failed to mention that we would like to have it made as narrow as possible as it will only be expected to bend metal ¼" thick maximum.

Very truly yours, The A. L. Smith Iron Works, by
H. A. Lerner, Vice-President. S.

HAL:SS.

[fol. 56] According to our records we received this machine March 15th and it was all set up by April 15th, 1926, and began to operate the press April 15th. I don't believe we had operated it before. I probably was in the shop on that date. Hovasse and Lerner were there. Carron, one of our employees at that time, had operated such a press and he operated this one when it was first operated April 15th. For quite a time we built risers and treads only on that press.

"X Q. 48. Now, you have said that the press operated unsatisfactorily from the very beginning. Is that the fact?

A. That is the report I used to get from my men.

X Q. 49. No. I asked you whether that is the fact.

A. Yes, it is the fact.

X Q. 50. Did you personally observe anything unsatisfactory in the operation of that press on April 15th when the operations first began?

A. I don't believe I observed it the first day but it was pointed out to me right afterwards.

X Q. 51. Well, do you mean the second day or the third day?

A. Yes, right after the machine was started.

X Q. 52. All right. What was pointed out to you, not what was said but what was pointed out?

A. One bearing was overheating and it was necessary to——

X Q. 53. No.

A. All right. It was overheating.

X Q. 54. Anything else?

A. Some trouble with the clutch.

X Q. 55. Anything else?

A. I can't think of anything just now."

Hovasse called these things to my attention. Several things that didn't seem to work right were called to my attention.

"X Q. 56. All right. Now I ask you to tell us what was called to your attention as being wrong with the machine.

Mr. Gallagher: Besides what he has testified to.

X Q. 57. Besides what he has testified to.

A. After a while, I don't remember exactly, after the machine was started it was called to my attention that it does not bend material in one operation and it doesn't do a perfect job on it.

X Q. 58. All right. Now, let me fix it this way: Let's assume that the machine started April 15. Now, had it been in operation a week or ten days or five days when this that you [fol. 57] now mention was called to your attention?

Mr. Gallagher: The last matter he mentioned?

Mr. Friedman: The last matter he mentioned.

A. I don't think that was called to my attention until the machine was perhaps a couple of months in operation. I am not dead sure of it. I know it was quite a little while afterwards when they began to do some heavy work and found difficulty.

X Q. 59. Can't you look at the records of your company and give us any detailed information?

A. I didn't intend to keep a record of that. I didn't expect I would be asked those questions."

After April 15th I saw the machine in operation whenever I was in the shop and the machine was being operated. Right off it came to my attention that the machine was not satisfactory and I followed it up in a general way.

"That is, I generally make my rounds in the morning to the plant, and I see the various departments, and I talk to the various people there, the men and the foremen, and so forth."

No complaint was made to Ohl until our June 25th letter. We received Ohl's answer (Exhibit DD) to our letter of June 25th (Exhibit CC). I don't think when we got that letter we had the flywheel shaft taken down. I don't think we cleaned out the bearings with kerosene. I don't believe we cleaned out the oil holes and the flywheel roller bearings. I don't think I looked into the question of what grade of grease or oil we were using. I showed the letter to the machinist. Simpson was in our employ at the time. He is superintendent of the whole works. He is there yet. Ships was there then and is there now. He is foreman of the structural department under Simpson.

On redirect examination the witness testified:

I gave the blueprints and specifications of Exhibit 14 some study or thought but made no computations of stresses.

"Q. 60. Did you by these specifications understand you were to get anything suitable for the work you describe?

Mr. Friedman: Wait a minute; I object.

[fol. 58] Mr. Gallagher: The basis has been laid here by this cross-examination.

The Court: I will allow it and save your exceptions.

The Witness: Will you please give me the question?

[The question is read.]

A. Decidedly so, before."

We proposed to make stair risers and treads on the small dies, and stringers out of ⅜" steel running sometimes as long as 15 or 18 feet. The 12' 2" die I ordered of Ohl for stringer work we received, measuring 2¼" across the female end. I left matters of oiling and other suggested matters to cure our troubles to Hovasse.

RAYMOND H. WILHELM, called by Smith, testified as follows:

I live in Newtonville, am a salesman for the Bethlehem Steel Company, and am familiar with steel plate and steel of similar dimensions described by Mr. Smith on the witness stand. Steel plates are sold on gauge thickness or weight per pound basis, and steel sheets invariably on gauge thickness. Three-eighths inch steel varies in thickness. The mills aim to roll no material below 1/100 of an inch below the specified thickness dimension but because of wear on the rollers absolute uniform thickness is not found commercially and a tolerance of 7 percent in weight over or under the exact dimension weight is commercially allowed in any one lot of steel. One particular sheet in the lot may exceed that tolerance by 1⅓ or about 9 percent above or below exact thickness specified, but the lot itself must average within 7 percent. The edges of a plate are measured to give as near exact dimension as mill conditions permit but because of wear on the rollers the center of the plate may be thicker than the edges. On 10 gauge and thinner plates or sheets 5 percent is the tolerance over exact dimension allowed in a lot of steel although individual sheets of that particular lot may vary one from the other as much as 10 percent. That is, one may be 5 percent below exact standard and the other 5 percent above exact standard.

On cross-examination he testified:

On the ⅜ inch steel, one sheet might be 10 percent thicker [fol. 59] than exact standard and one in the same lot 10 percent less than the exact standard, or a variance of 20 percent between the two, but the lot itself must average within 7 percent of the exact standard. Assuming the edges as they come from the roller are uniform, wear on the roller may result in the center of the plate being thicker, with excess weight and excess thickness in the center. If the mechanic does adjust the rollers too close together the same difference between edge and center may result but with a deficit in weight. This variation in thickness is known and recognized in the ornamental and structural iron trade. There is a published statement by The General Association of American Steel Manufacturers giving us what is known as a manufacturers' standard tolerance on

plate material, with which the trade is familiar. In any one sheet of steel or plates material the carbon content, which is one of the factors determining the hardness of steel, may be greater in one of the plates than it is in another. Hardness and softness of a steel plate, because of variance in carbon content, is not uniform throughout the plate.

CHARLES J. HOVASSE, called by Smith, testified as follows:

I live on Clinton Street, Chelsea, Mass., am and have been a machinist for about 25 years, in general repair and in several different plants, working for the Smith Iron Works for about 15 years as a machinist. In March, 1926, I was a master mechanic, having three to eight men under me, in charge of maintenance, in all departments. Since 1925 I have been doing general repair work making small dies, punching and some fabrication of shop tools. In the last part of 1925 my attention was called to the possible purchase of an Ohl machine. I saw the various items of Exhibit 14.

"Q. 1. Did you make any calculation to determine the capacity of a machine of 12 feet, described as 12 feet 6-inch power press, built according to these alleged specifications at that time?

A. I didn't do any figuring of any kind."

I went with Mr. Smith to the Ohl plant in Newark. I can't fix the date. I made only one visit. This was before the ma- [fol. 60] chine was ordered or bought, being there only one or two days, on or about February 25 and 26. My first trip was before the order was given, before November 24. I next went to Ohl's plant the day or two before February 25 with Mr. Smith. I saw Mr. Ohl and was introduced to him as master mechanic. He said: "Come right down stairs and I will show you how to oil it up." The three of us went down stairs together, went to the machine, were told some of the dies were not quite ready. We waited a while and they put in dies for making risers and treads of ⅛ inch stock using a temporary motor fastened to the flooring and belted to the machine, not the motor that finally was attached to the machine. In making this tread and riser the

machine stuck and several men tried to reverse it with a bar, then speeded up the generator to give this motor more power. That failed. They brought an overhead crane and finally reversed the machine. This took about one-half hour. That is all that happened that day. I went back the second following day, I think February 24, to see them dismantle the machine and the foreman told me his idea for me to tackle the proposition with the tools I had. He pointed out to me what to oil and told me there were no hidden or odd places for oiling not visible or without oil holes. I was alone that day and no work was done on the machine, nor anything formed on it. I went again the next day, February 25, alone. I asked them to bend a piece of ⅜ inch.

"A. And they put in three pieces to equal the length of the press and bent them."

Just one bend was made. No one piece 12 feet 6 inches in length of ⅜ steel was bent. Three pieces bent at the same time averaged about 4 feet each, and were bent in one operation. They bent a piece of quarter inch or 5/16 inch stock. That is all. That quarter or 5/16 inch piece was about 12 foot long. I asked to see three-eighths.

"Q. 2. Now, I think you said you asked to see three-eighths inch steel bent?

A. Yes.

Q. 3. And did you ask for a full length?

A. Not in particular.

Q. 4. You didn't. Was there any search made for three-[fol. 61] eighths material about the plant that day?

A. Why, I think they had quite a time in finding it, I believe.

Q. 5. And how did they finally make up this three-eighths that they used?

A. They took a piece and planed it. It was planed on one side to bring it to thickness.

Q. 6. And that is what they used in the machine?

A. Yes, sir."

They started to disassemble the machine while I was there and I watched them. I talked with Mr. Wepler of Ohl's office as I was going out.

"I told him I wouldn't stay to see the whole of the machine taken apart. I didn't consider it necessary. I have relations in New York and I was going there, and, if anybody should call for me, to notify them that is where I was. I said 'Good-day' to him, and he said, 'Just a minute. Will you sign this paper?' I said, 'I have got nothing to sign.' He said, 'It is just to show I have given you full instructions and you have seen the machine running', and I hesitated a minute and he said——

Mr. Friedman: Would you mind giving me that again for my convenience. Will you just give me that?

The Witness: He said, 'It is just to show that I have given you full instructions and you have seen the machine running', and I hesitated a minute and he said, 'My boss is an old crab, and will give me hell if I don't get this thing signed.' So, I accommodated the fellow and signed it.

Q. 7. And was what you signed a paper of which this [indicating] is a copy, a photostatic copy?

A. I should say yes."

The paper referred to was Exhibit RR as follows:

EXHIBIT RR

Geo. A. Ohl & Co., Newark, N. J.

February 25th, 1926.

This is to acknowledge that Mr. Hovasse of A. L. Smith Iron Works of Chelsea, Mass., has tested the 12' 6"-103,000 lb. Power Press or Brake and Dies and found everything satisfactory. Re order #23557.

Charles Hovasse.

Nobody dictated the paper. Mr. Wepler told an elderly [fol. 62] lady there to write out a form and she brought it back to me all typewritten. He handed me a pen and I signed it. Only the 90 degree die was tested out that day. No one piece 12-foot 6 inch lengths of three-eighths steel was put into the press that day. I returned to Chelsea. I didn't report to Mr. Smith what had transpired on February 25. About March 15th we received the machine disassembled, in two carload lots. While at Ohl's plants there was discussion in Ohl's presence concerning a spring or sag in the bed of the machine. In trying the press I noticed

the bed went down considerable. The bed is the part where the dies rest on.

"I asked if I could have a square to see how much it went down, and they said it didn't make any difference, but if I wanted a square they would get me one. And they did. And I noticed it went down about one-sixteenth.

Q. 8. Of an inch?

A. Of an inch.

Q. 9. Yes.

A. And that is all I had to say about it."

[Exhibit SS, submitted herewith, was then introduced in evidence.]

The foundation for the machine we built was deeper than called for by Ohl's specifications because we had to go deeper on account of the soil. It was at least as strong. The bed of the machine is the lower part upon which one die sets. The hammer is the other die and in the operation the hammer with its die comes down on the bed with its die in forming the piece. I attached the machine to the foundation as directed. We started to operate the machine April 15th. There are seasons in the steel forming business which relates to three-eighths thick steel and to lighter steel for risers and treads, the three-eighths being for stringers. When the machine was set up and ready to start I put on the switch, started the motor, got it running, told the operator to put his foot on the lever so I could count the strokes the machine was producing. It was powered with a Fairbanks 30 horse power motor, driven through a clutch and operating through a flywheel, in which there was a further clutch. The flywheel being connected with the hammer through successive gearings. The [fol. 63] machine was started and I started to count the strokes, the number of times the hammer went up and down in a minute. Before the minute was up the machine stopped with a growl. Something got stuck. I looked for the trouble and found the 16-inch bearing had turned around in the housing. This is the bearing in which the clutch shaft assembly revolves. Our motor is connected directly to the machine. This bearing is of phosphor bronze, to take up the wear and allow a free revolving shaft. This bearing is not supposed to revolve but to be

so tight it cannot be moved and the shaft to revolve in the bearing.

"Q. 10. What did you do when you found that condition?

A. I had to strip the whole machine on that end in order to take that out and see what was the trouble.

Q. 11. Did you take it out?

A. I did.

Q. 12. And what did you find the condition of that part of the machine?

A. I found all I had to do was to take out—pull it out with my hand.

Q. 13. That is, instead of being tight and firmly fixed in, you could remove it by hand?

A. Yes, sir.

Q. 14. As you have observed machines are those generally bolted in?

A. Generally bolted in with a heavy bolt.

Q. 15. That makes it immovable?

A. Immovable."

We didn't assemble this bearing. It was in the machine when we got it. I put the bearing back with set screws so it would not turn loose again and I turned eccentric spaces on the top of the bushing and put in these small holes and added two more oil cups on the outside so they would act as a reservoir and the oil would feed down. I reassembled the bearing and oiled it and then ran the machine for a while. A few months later we had trouble again with this bearing. The flywheel bearings and disc referred to in Exhibit CC, letter of June 25, is located right next to this 16-inch bearing.

Q. 16. And were you at that time, even after making the changes in the bearings that you have described and putting in the two oil cups additional, were you still having trouble there?

A. We had.

[fol. 64] Q. 17. And did you have to shut down several times a day to cool it off?

A. We did.

Q. 18. What did you do then as a result of that trouble?

A. We did nothing.

Q. 19. Did you make any repairs whatever, as a result of that trouble, or any investigation?

A. Not me."

August 19th the Boston Engineering Company started to take that part of the machine down and took part of it to their Boston plant. I didn't make any observation of the conditions about that area at that time. After it was reassembled and put back it gave no further trouble. We took the material away from the Boston Engineering — and I cleaned it and put them in working conditions. The brass retainer rings of the roller bearings were broken and there were chips of steel in the bearings. These small particles by their appearance indicated wear to me.

I found a big blow hole in the casting where the 16-inch bushing goes in shown in Exhibit WW (submitted herewith). That weakens the structure. When I received the parts back from the Boston Engineering Company a part of the brake that slows down the machine was broken, two blow holes showing at the break of the brake. I replaced the bearings with two double race ball bearings and thereafter had no trouble with that assembly. From March 15th to June 25th I had no occasion to bend any 3/8 inch steel or any long lengths. The bowing described by Mr. Smith is a bending down in the center of a piece of steel put in the machine for formation which comes out with a sag in the middle, and a deflection is a swinging down of the machine itself. We got the bowing or deflection in the center of the steel as contrasted with the ends. In some cases bending six-foot stair risers or like material that would be especially noticeable though not so much so where it is bent at the end of the machine. The heavy work came in around July.

— —. "Did you have some trouble of some kind later with the machine? Did you have any trouble of any kind with the machine?

A. Nothing beyond the bowing.

[fol. 65] Q. 20. Well, that's something. I asked you if you had any trouble.

A. I thought I had already mentioned it.

Q. 21. Then, I misled you. Did you have some trouble with the machine in addition to this trouble with the shafting and bearing near the clutch and brake?

A. I did.

Q. 22. Name one other trouble.

A. The clutch that raises and lowers the hammer for adjustment.

Q. 23. Yes.

A. Gave a lot of trouble, and finally gave out.
Q. 24. What was the trouble there?
A. Rather than look into the trouble——
Q. 25. No; what was the trouble?
A. It refused to work.
Q. 26. Did you remedy that?
A. I did by adding the separate motor.
Q. 27. That is, you put a separate motor on to accomplish this adjustment. Let's spend a little time on that. That regulates the closeness with which the two knives come together?
A. Yes."

The bed of the machine is supposed to be stationary and not to give. There is no mechanism on the machine for regulating the dies to the thickness of the material you propose to bend. There is an arrangement to regulate the closeness with which the male die should come down to the female die. I didn't change the mechanism of that arrangement but I changed the power that drove it from a clutch or pulley drive to a direct drive from an extra motor working independently of the machine. I had no trouble with this mechanism after I did that work in December, 1926.

"Q. 28. Now you have made some reference to the deflection of the machine or bowing of the material, and I think you said that was caused by the bed swinging down?
A. Yes, sir.
Q. 29. Was that the sinking or sagging of the center of that bed that you noticed down in Newark?
A. It was."

Bowing relates to the work and deflection to the machine. The extent of the bowing of the material we experienced depended on the length of the stock and with the tensity of the steel, being about ¼ inch bow in the center on a 12 foot 6-inch piece. This is unusual in our business and it is not a commercial job of forming to have that much [fol. 66] bowing. A piece so bowed has to be hammered or peened by hand to make it straight, peening meaning continuous hammering at short spaces. We could not bend the material in any one operation without noticeable bowing and a spreading of the metal being formed.

"Q. 30. Could you by more than one operation bend the material in the press without noticeable bowing?

A. No, sir.

Q. 31. Was there any spreading at all in the machine?

A. In the machine?

Q. 32. Yes.

A. Couldn't notice any.

Q. 33. Was there any spreading in the metal being formed?

A. In the metal, yes.

Q. 34. I think you made mention, or perhaps it was Mr. Smith, of three operations on the metal in this machine to form it. What was that?

A. That was on the one-eighth stock.

Q. 35. What did you do with reference to that one-eighth stock?

A. Why, you come down with the dies once keeping them towards the end of the machine.

Q. 36. Yes.

A. I will correct that. You start in the center of the machine and come down once and move it to one end of the machine, and give it a second stroke and slide it to the other end of the machine and give it a third stroke, so it will squeeze and fix into the right shape.

Q. 37. That is, you utilize only the ends of the press?

A. Yes, sir.

Q. 38. Now, at some time after you began to try to bend three-eighths material, did you notice this bowing and deflection?

A. I never bent any three-eighths material.

Q. 39. You didn't bend any of that on it at all?

A. No, sir.

Q. 40. When you bent other material did you notice that deflection?

A. Yes, sir.

Q. 41. And did you make some report of it?

A. Why, yes."

Lard oil is the worst lubricating oil you can use. We used a heavy medium vacuum oil, rated one of the best. My statement in Exhibit JJ that "I took the whole thing apart for the first time since assembled at your factory"

[fol. 67] refers to the whole bearing assembly including the 16-inch bushing that gave us trouble at first.

"Q. 42. And, by the way, you were there when this machine was disassembled by the Boston Engineering Company?

A. In our plant?

Q. 43. Yes.

A. Yes.

Q. 44. And what did you observe, if anything, with regard to the presence or lack of oil, lubrication?

A. Well, it was saturated with oil when it left the plant."

Ohl later sent their representative, Mr. Kolarsy, to our plant about September 1st. Mr. Lerner brought him to the machine shop and introduced him to me. I showed him the machine. He asked whether the machine was set up level. I handed him a level and he put it on the machine, both on the bed and uprights, and said it was perfect. I took him upstairs and showed him the broken parts and told him what I intended to do with the 16-inch bearing—that I was going to put ball bearing in place of the 16-inch bearing. I also showed him how I was going to fix the brake. He said that what I was going to do looked all right. He said that Ohl, after hearing his story, no doubt would see to it that everything would be fixed up all right. He said that the machine could be broken with a piece of paper; that if he came down there after everything was going, he could properly run it so that there would be no deflection. I told him that the stringers were not bent straight. He said he would take that up with Ohl and see if that couldn't be straightened out later. I explained to him what I had done with respect to oiling the machine and the changes I intended to make on the 16-inch bearing "Exhibit UU". No claim was made by Mr. Kolarsy, or anything said to me in substance to the effect that I had not properly oiled the machine. No suggestion was made by Mr. Kolarsy that I should have used grease instead of oil. I was mistaken in saying that Mr. Kolarsy spoke to me about the paper breaking the machine; it was one of Ohl's representatives who came later. He told he that if the dies were properly set, an extra piece of paper put in would break the press. There were no grease cups on the machine when it first

[fol. 68] came to us. There was a considerable difference in the method of using grease and oil as lubrication. When you use oil, you simply fill the oil cup and it runs by gravity; when you use grease, you have to force it in by turning some sort of screw. When Kolarsy was there, he said that the bearing would gradually heat through friction from the brake if there wasn't at least one thirty-second of an inch clearance. This brake is to stop the machine's operation the minute you shut down the machine, and stops the flywheel from continuing to revolve. As a result of my talk with Kolarsy, when I put the whole assembly back I put shims between the bracket and the housing so as to throw the whole bracket out a thirty-second of an inch.

I was at the Ohl plant on three occasions. The first day I was at the Ohl shop in February, Mr. Smith said to Mr. Ohl, in my presence, that he noticed the press went down considerably and asked if that was all right. Mr. Ohl said simply because it was on a temporary foundation and when bolted on its original foundation everything would be all right and not to worry.

After Kolarsy's visit, Professor Townsend and Professor Swett came to the plant, made observations concerning the machine. While they were there we were bending a piece of 3/16ths material and observing the deflection on the machine with a Brown & Sharpe indicator which measures down to about 5/1000ths of an inch. We were using a 90 degree die 12 foot some odd inches long. The bed of the machine bent down 65/1000ths of an inch. The professors wanted to take another reading so I told the operator to turn the material around and make another bend. He did so, and the machine broke on the right-hand housing at two places in the housing or stanchion. Mr. Carron was then operating the machine.

[Six photographs of the machine showing the breaks were introduced here as Exhibits BBB, CCC, DDD, EEE, FFF and GGG and are submitted herewith.]

There is no gauge on the machine for adjusting it to the different thicknesses of metal. The machine is adjusted for the material intended to be bent by the trial and error [fol. 69] method. Assuming we had three/sixteenths metal to work on, we set the dies in this way: "I put in the

dies and raised the hammer more than 3/16ths; we pick up an old scrap of 3/16 stock and put it on the dies and bring it down and try it, then when the machine went up again, we bring down the hammer to the adjustment to what I thought was nearer to the setting. Then I tried again, and if I didn't bring it up to its proper bend, I would repeat the thing until we got just what we wanted for a setting." We make the adjustment constantly and bring the hammer nearer until we get the correct setting.

At the time the machine broke, we had bent the piece of stock on one edge, turned it around and bent it on the opposite and parallel edge and then asked the operator to repeat the stroke on the second edge, making three times that the hammer was brought down. The thickness of the sheet on the side of the first operation was 196½ thousandths of an inch. The opposite side where the second bend was made was 201 thousandths of an inch, 3/16th steel is 187½ thousandths of an inch. The metal that was bent is commercial 3/16ths metal.

After the stanchion broke I repaired it by making steel yokes over the top and putting in large 3-inch bolts to hold it together. So the broken pieces couldn't separate. That did not result in a firm holding so we bored through the bottom bed and the top cross member and put in two steel parallel forgings with pins holding the top and bottom sections of the broken housing together.

After that repair we operated the machine on risers and stringers. We never bent over a ¼ inch thick steel on the 12 foot material. We sometimes took one operation and sometimes two, depending on the tensity of the steel, its hardness and softness and its carbon content. There is a difference in the hardness or softness of this ornamental steel material and there are different grades or hardness, although it is all called soft steel. Because of these repairs we lost some 18 inches in the usable length of the machine. The bars used to repair it narrowed the opening in the [fol. 70] housing so we can't put wide metal in the machine in". Before we got the Ohl press we had no machine like it

On cross-examination:

I was the expert mechanic but had something to do with the manufacturing, as on new machines I am supposed to watch their operation "until a machine is considered run

in". Before we got the Ohl press we had no machine like it at the plant and I had never operated any such machine nor had the Smith Company to my knowledge during the fifteen years or so I have been with them. Before I went to Ohl's plant in Newark around Washington's Birthday I had never seen an Ohl press in operation. Up to the time I saw the blueprints and specifications of Exhibit 14 referred to in Ohl's November 9th letter I had never seen an Ohl machine. I was accustomed to read blueprints and understand them and had experience in making them. I had never seen an Ohl press before February 23, 1926, either in operation or out of operation. I am wrong. I saw the press before at Ohl's plant possibly a month or so before Washington's Birthday and before the order was given before November 24 with Mr. Smith. It was a press practically completed, but not in operation; just being built; I think an 8 foot Ohl press. I saw the Exhibit 14 blueprints and went over them with Mr. Smith before the press was ordered. On February 23 at Ohl's Newark plant I watched the machine in operation, which machine was later sent us. The power unit was not installed and a temporary motor was being used but otherwise the machine was complete. I got there about nine or ten o'clock in the morning and stayed until about four in the afternoon. I saw the machine bend a sample of our stair riser, taking three to four hours to bend it. I went back on the following Thursday about nine o'clock in the morning and stayed until late in the afternoon, probably four or five o'clock, and saw the machine bend three pieces of ⅜ths stock in one operation. These pieces were about six inches wide and about four foot long making about 12 foot of ⅜ths inch soft steel stock, to bend at one time to a 90 degree bend on one of the dies furnished by Ohl and later sent us, taking 15 or 20 minutes to [fol. 71] make the bend. It was bent in one operation. They then bent a piece of ¼ inch or 5/16ths 6 to 8 foot long 90 degree angle, taking 15 to 20 minutes. That piece was bowed when it came out as I observed at the time. I called no one's attention to it and made no remarks about it at the time nor was any criticism of it made in my presence.

"X Q. 45. Now, how about those three pieces that you testified about that were each four feet long? Do you want to change your testimony about those in any way?

A. No, sir.

X Q. 46. Those were all right.

A. I didn't take any particular notice whether they were or not. They were simply bent.

X Q. 47. This occasion was the first time you had ever seen an Ohl press in operation?

A. Yes, sir."

These four pieces were bent in the forenoon on the 90 degree die. I made no inquiry from anybody as to how those dies ought to be tightened, manipulated or arranged. I asked the foreman for instructions about assembling the machine without the equipment they had there and how to use the special dies, that is, I asked what would be the best order to use these five dies in, as I didn't know. The foreman told me the order in which he would use the dies. I can't remember which one he told me to use first. I didn't ask him about how the dies should be placed in the machine. I asked him how to regulate the hammer stroke and noticed that was a very delicate operation requiring a good deal of care, skill and experience. He told me the best thing to do was to take a small piece of scrap of the stock I intended to use and adjust the dies with that, getting it too high at first and gradually coming down until it squeezes into the right shape. I asked him what would happen if a mal-adjustment was made and he said the machine would be liable to stick.

"X Q. 48. Did he tell you, you might break the machine?

A. He did not.

X Q. 49. Didn't you know you would break the machine if you made the wrong adjustment yourself? Didn't you know that yourself?

A. I did, possibly.

[fol. 72] X Q. 50. Possibly. Well, did you know it possibly or did you know it as a fact?

A. No, it was not a fact.

X Q. 51. As an expert machinist, do you know that as a fact?

A. The machine is built to stand this work.

X Q. 52. Do you, as an expert machinist, know as a fact that if you make the wrong adjustment in that hammer, you may possibly break the whole machine?

A. Yes."

I don't think I asked for any other instructions about operating the machine. No information I requested was refused me. They did everything on the machine I asked them to.

I met Mr. Wepler previously in the office. This last day I left the factory through the office, met Wepler in the office, no one had asked me to call at the office and see him, and I had some talk with him. He said to a lady clerk: "Just typewrite a paper for this man to sign that he had seen the machine running", and she came back with this paper, Exhibit RR, which he gave me and which I read. They passed a pen to me and I signed it. I did not ask him to make any changes in the paper but told Wepler I have no right to sign anything. I did not tell him that it was not the truth that the power press and dies had been found satisfactory by me. Before August 25, 1926, it had been called to my attention that Ohl claimed I had seen the press in operation and had found it running satisfactory. I never wrote to Ohl that that statement was not true. The only statement I made to Ohl in that respect was in my letter to them of August 25th.

We received the machine at the factory about March 15th. Soley & Blair, building movers, brought it to our plant and raised the heavy parts of the machine to position on the foundation we had built under my direction, finishing their work about the 23d, when the stanchions were up, the bed in place, the heavy hammer and the heavy cross bars and shafts were up. I did not take the responsibility of directing them how to assemble the heavy portions of the machine. They installed the stanchions, bed, hammer and the cross bars and the main 8-inch shaft. I inspected their installation and examined the different parts before they were put in place.

[fol. 73] We started to operate the machine on April 15th for the first time. Mr. Carron was the man hired to operate that machine. He had been hired some weeks before and helped assemble the machine. I was in charge of the starting and operation of the machine. My previous experience with an Ohl machine was seeing the four pieces bent at the Ohl factory. I started the machine and the hammer moved one or two operations but hadn't run a minute, without doing any work and without dies *it*, when I heard

a growl and the machine stopped. I examined the machine, found I couldn't move the shaft, that it was stuck in some bearing, and found that it was stuck in the 16-inch bearing. I took the thing apart in order to get to that bearing and found that the screws to hold the bearing from turning had sheared off, and the bearing was turning loose. I took the bearing out, tried to turn it on the shaft, found it kind of bound in places, put it back in the machine, drilled screw holes for screws to hold it from turning, cleaned the shaft and put the assembly right back again. I scraped off the sports where it was snug to the shaft.

"X Q. 53. And when you put it back all that was eliminated?

A. Yes, sir.

X Q. 54. And when you put that bearing back that day was it in perfect working condition?

A. No, sir.

X Q. 55. What was wrong with it when you put it back?

A. It wasn't a perfect bearing because the low sports couldn't be brought up to make a bearing. You take off the high sports before the low sports that are beyond, and you couldn't bring them up."

I brought that condition to Smith's attention, told him I had trouble with the bearing and what the trouble was, telling him the workmanship was imperfect and explaining in that way. This was all on April 15th. Short of adding a new bearing there was nothing that could be done to make that bearing right.

"X Q. 56. So that as early as April 15, 1926, you and Mr. Smith both knew the trouble to be that that bearing was imperfect in its construction. That is right, isn't it?

A. Yes, sir.

X Q. 57. It wasn't a question of assembly. It was a question of construction?

A. Yes, sir."

[fol. 74] After we put the bearing back we tried it out. It gave us trouble right along. When we run the machine continuous it always got hot and troubled us after that.

"X Q. 58. Then, it is fair to say that beginning with the fifteenth day of April, right along until you replaced it

and you replaced it in September, that bearing was troublesome?

A. Yes, sir, when run continuous."

In two or three days we had fixed the machine and started it in operation. This was the first time I had ever set dies in that type of machine.

"X Q. 59. Now, will you tell me in your own way in putting the female die on the bed how you determined whether it was level or not?

A. The bed determines the levelness itself. The die has got to be parallel the full length, and when you put the die on the bed there is a tongue that falls down into a slot which holds it in alignment. It can be pushed either way sideways, and lengthwise, depends upon the——"

At that time I didn't know of the peculiarities of the iron that Mr. Wilham testified about. I don't know what die we first put in when we first operated the press. We used 1/8" stock 3 or 4 foot long. I think the press worked all right. I don't know whether it produced perfect material or not. It was apparently satisfactory. Mr. Carron operated the press under my instructions from the information I had from Ohl. I told him to take a piece of scrap of the same thickness and set the dies before trying the work itself. That's all I recall I told him. I watched him off and on for a couple of weeks operating the machine, producing work that was satisfactory to me. He was using the five dies for the risers and treads, possibly the 90-degree die. No other than Carron operated the machine during these two weeks. During those two weeks I observed indications of trouble with the machine. When we put oil in the flywheel bearing there used to be brass dust like small gold dust that would throw from that bearing on the machine. I asked Mr. Lerner to write Ohl and ask them what the construction of the flywheel assembly was. This was some time before May 1st. To my knowledge I don't think there was any com-[fol. 75] plaint about the machine to the Ohl Company before June 25th. This brass dust indication kept going on. I didn't know what the trouble was. This wasn't a serious matter so long as we watched it. After the two weeks period when I observed Carron operating the ma-

chine I made weekly inspections. The machine was operated certain parts of every day. This June 25th letter was the only complaint the company made to Ohl up to that time. That letter refers to the flywheel bearing and disc getting very hot.

"X Q. 60. The flywheel bearing getting hot is something you haven't told us about yet?

A. No, sir.

X Q. 61. When did you first notice the flywheel bearing got hot?

A. Never noticed it to get hot.

X Q. 62. All right. Then that complaint of heating of the flywheel bearing and disc was without justification?

A. The words are wrong.

X Q. 63. I will read this letter, Exhibit CC, June 25:

'We are very much concerned over the fact that the power brake which we bought from you is giving us considerable trouble as the flywheel bearings and disc get very hot although we are using a considerable amount of oil—'

Now, is it a fact that the flywheel bearings and disc were giving no trouble at that time?

A. That is a mistake, an error.

The Court: He wants you to answer Yes or No. Is it a fact they were giving no trouble?

The Witness: Indications of trouble.

X Q. 64. Well, that wasn't the indication that you spoke about, that you pointed out—quite another bearing.

The Court: That was in the flywheel?

The Witness: It gave indication of trouble.

The Court: That was the same wheel?

X Q. 65. Is it a fact that at this time the flywheel bearing and disc got very hot?

A. No, sir.

X Q. 66. That is what I wanted to know. There was no basis for any complaint about the heating, or getting very hot, of the flywheel bearings and disc?

A. That is right."

* * * * * * *

[fol. 76] "A. I don't remember any dates in particular but we have two forms of repair work orders. Any job that appears like a small job of a day or two days is on one form and jobs that are considered as going to run into considerable money are entered on another form. We have to get an order number from the office for that kind of an order.

X Q. 67. Mr. Smith says there was this June 25 report which you said was without foundation, and the next report of anything being complained of was on the 13th of August. Have you got that in mind? You testified a little I think about it.

A. If the work is of no great expense there will be no order that would be here.

Mr. Friedman: Would you mind letting him have his records, Mr. Gallagher?

[Mr. Horvitz hands papers to witness.]

X Q. 68. Now, what is the first date that you can tell us that you did any repair work after, we will say, May?

A. The first expensive job, that is why I would have to put it on this form, would be 9/2/26.

X Q. 69. The twenty-sixth day of August?

A. Yes, sir.

X Q. 70. No, not that.

A. 9/2/26.

X Q. 71. Oh, that is the second day of September?

A. Yes, sir."

Some time before June 25 I examined this machine. After June 25 I just made periodical examinations during which nothing was brought to my attention as to the machine going wrong. After June 25 to September 2d nothing out of the way with regard to this machine was brought to my attention. Shortly after September 2d the Boston Engineering Company came down with four or five men and took the clutch assembly off the machine. I saw them do it. Nothing had come to my attention at that time to indicate any broken bearing.

"A. He took one unit, and all I looked at was the shaft that went in that bearing. That is the only exposed part I could examine.

X Q. 72. The shaft that went into the bearing?

A. That went into that long bearing there [indicating on Exhibit TT].

[fol. 77] X Q. 73. And what did you see with reference to that shaft?

A. It was all right.

X Q. 74. And the bearing was unbroken?

A. Which bearing?

X Q. 75. Did you notice any broken bearing?

A. You couldn't.

X Q. 76. And had anything come to your attention up to that time to indicate any broken bearing?

A. No, sir."

I next saw that part at the Boston Engineering Company's Boston plant. While I was there I saw them trying to pull off the brake pulley, and break it while doing so by trying to drive it off the wrong way against the key. In my judgment it broke because they were taking it off the wrong way and not because of any inherent weakness. They brought the parts back to our plant and I reassembled them after making repairs, bored out the housing where the 16-inch bearing goes and put in ball bearings instead. I did this according to my own ideas without taking it up with Ohl. In putting these parts back I changed dimensions to meet my judgment of what was supposed to be right without consulting Ohl or anybody else. I don't remember when I finished these repairs that began September 2d. From my records they were finished September 7, 1926. I can't tell when the operation of the machine was resumed. I tested it out and the portion I had repaired was operating satisfactorily. So far as I observed, the machine was fit to perform all its functions. I changed the motive power for the hammer adjustment in December, 1926 by installing an independent motor to operate the hammer adjustment. The hammer functioned in the same way. After September 2d I knew there was trouble with the machine on its product. My attention was called to it some time after this repair job. The bowing of long material was called to my attention. I had never handled such long material myself. I don't remember the dates, but a few weeks before the professors came this was called to my atten-

tion and I experimented by putting wedges under the bed and running babbitt metal under the bed to hold it from going down; just poured it in naturally without any strain or stress to that bed. I found that didn't work. Before [fol. 78] I did that there was

"just enough clearance to—well, a small clearance that is all, probably a ¼-inch".

"There was a space between the concrete foundation and the bed of the machine; I was not told by Ohl that the bed was supposed to rest right in and on the concrete; all the rest of the machine was bolted right to the foundation."

The next thing after I tried this experiment was the professors' visit. Carron was then operating the machine. The first time the professors came they just took measurements. They came back the second time and we put on the indicator to test the machine. The indication as shown by the indicator could be observed with the eye. Professors Swett and Townsend and I gave suggestions as to operating the machine. We put in that small rod that is here in the court room of 3/16-inch stock. One edge of that rod where it is bent is bowed. The other edge where it is bent looks pretty good. Both ends were made with the same dies and practically at the same time. On this particular piece of metal the edges are of different thicknesses. I had never noticed that bowing in products from this machine before June 25, nor before September 2d. I first noticed it some time after September 2d and before the professors came. We probably used long lengths before this time but the deflection may not have come to my attention.

"X Q. 77. That is, your attention was never called to any bowing or that they were using this machine for a long length of heavy material until October?

A. My attention wasn't brought to that until some two weeks before the professors came.

X Q. 78. Now, when you had your attention called to that machine, the only trouble with it at that time was the bowing, wasn't it?

Mr. Gallagher: What time is this? Which time?

X Q. 79. In October?

A. I would say. Yes.

X Q. 80. Everything else was working satisfactorily and properly?

A. Yes, sir.

X Q. 81. And the bowing was the only difficulty?

A. And the spreading also, all taken into consideration. [fol. 79] X Q. 82. Now, there was no spreading on this? [Referring to the piece in the machine when it broke.]

A. There may not be on that particular piece.

X Q. 83. Now, would you be willing to give us your opinion now what is the bowing in figures on that piece that we see here?

A. In figures?

X Q. 84. Yes.

A. I wouldn't attempt it.

X Q. 85. Can't you give us any idea? Couldn't you measure it?

A. Measure that?

X Q. 86. Yes, the extent of the bowing.

A. I won't say there is any in that.

X Q. 87. You wouldn't. I see.

A. There is bowing.

X Q. 88. Well——

A. I will take that back.

X Q. 89. All right. Take it back if you want to. What is your answer now?

A. On the bowing there was a difference of the space that was under that string when you looked at it. That was the bowing of that piece, the difference from the string down to the steel, that space.

X Q. 90. There was very little of it, wasn't there?

A. I am not disputing the amount.

X Q. 91. You say there was bowing sufficient in that piece to make it imperfect?

A. Yes, sir.

X Q. 92. That is, you call that piece imperfect because there was, as you think, in certain places, some space between the string and the steel?

A. Yes.

X Q. 93. Have you had any experience with this kind of material?

A. No, sir.

I noticed that this kind of steel varies in that certain places in a sheet may be harder than other places. I learned that since the arguments about this machine came up. That fact would to a certain extent vary the effect of the hammer on the steel. This piece in the courtroom that I have spoken about was the one the professors were experimenting with when the machine broke. One bend had been made; the second bend had been made and a repeat stroke was made on the second bend when the machine broke. I would not say whether or not the hammer was meeting with any re- [fol. 80] sistance in making that second stroke on the second bend.

"A. There are two operations to the bending of that, or two distinct functions that took place. The first is the stock starts to bend, and the second function is that it has to be set; simply bending a piece don't necessarily hold it in that shape. It has to be squeezed to that shape."

There were no changes in the adjustment while making these three bends. Up to this time I had observed nothing wrong with the stanchions which then broke. Nothing wrong about them came to my attention. I did not consult Ohl about making the repairs on this break. I first put in yokes and bolts, found that unsatisfactory and then put on upright slabs. I knew by doing so I would cut off the usable length of the machine. I took that matter up with Mr. Smith. He said, if possible, to repair it so as not to lose any length. I never tried to bend any 3/8ths material on this machine. I saw them bend 3/8ths on it at the Ohl plant but since then have never seen any 3/8ths tried on the machine. I have never seen a 3" female die used on the machine. We haven't one at our shop. Our largest is supposed to be 2¼" but measures 2 and 5/16ths. There is no indicator or gauge on the machine to determine the setting for any specified thickness of material. The setting of the hammer depends on the judgment of the operator.

"X Q. 94. That is a very important thing in operating this machine, isn't it, the regulation of the stroke of the hammer? That requires a nice adjustment, doesn't it?

A. That is all there is to the running of it.

X Q. 95. There is a good deal of skill required?

A. Yes, sir."

I went to Ohl's plant with Smith before the machine was ordered and went there again when the machine was ready. All of the parts of the machine were at our plant by March 12, 1926. The June 25th letter statement, "the power brake is giving us considerable trouble as the flywheel bearings and disk were getting very hot," was an error between the man who took the order and me. Nothing of that sort was happening. I was having no heating trouble with that [fol. 81] bearing at all. The trouble we were then having was on the 16" bearing. It was in the 16" bearing we located the trouble when we first ran the machine on April 15th. When we saw the machine in operation at Newark this shaft and bearing were apparently running right. They were giving no trouble. When we received the machine the bearing was installed in the housing, the shaft was separate and I installed the shaft in the bearing. It is possible that if the shaft when installed was not properly lined up it would tend to bind in some part of the bearing. If the shaft and bearing bound there would be a tendency to turn the bearing. That is, would shear the screws off. If the shaft wasn't properly lubricated in time it might heat up and bind, tending to shear off the screws. If when installed the shaft was not thoroughly cleaned of dirt and grit picked up in transit and the bearing was not thoroughly cleaned, it might bind and shear off the screws. Any one of these three conditions would be an adequate explanation for what happened when the machine was first run. When I saw it running in Newark I didn't notice any defect.

On redirect examination:

I cleaned the shaft and bearing before I set them up and oiled or greased them. After I put the bearing back I put the shaft in in the same way and had no trouble.

"Q. 96. If lack of alignment had been the case, would you have had some trouble afterwards?

A. Yes, sir.

Q. 97. And you set it up according to their specifications, didn't you?

A. Yes, sir."

The blueprint of the Ohl Company showing the distance between the foundation bolts on the machine was 13 feet 8 inches across. The foundation as I built it, as shown by

Exhibit K, was 13 feet 7 inches across; as Ohl Company built the machine, this distance was 13 feet 9 inches across. The distance crosswise between the bolts, as shown on the blueprint, was 7 feet 7 inches and that was precisely the distance on the foundation that I built. The distance in the machine that was built was 7 feet 6¾ inches. There is no foundation support shown in the blueprint Exhibit 13. There was no foundation support under the bed in Newark; [fol. 82] and when Kolarsy came to see that machine in our shop in October, he made no criticism of the way it was set up on its bed. The Z bend that was in the machine when the professors were there is not a typical bend for stringer work—stringers are bent channel shape. If you take a piece of steel and bend it one way and get a little bowing, then you put it in the machine and make another bend the other way; the second bend takes the bow out of the first bend and retards the bow in the second bend. If you bend a channel iron, you have a tendency to increase the bowing.

The machine as we are using it now for steel lengths still bows. I discussed this defective workmanship and bowing of material or deflection of the machine with Mr. Smith and Mr. Lerner.

"Q. 98. And did you learn from either one of them at some time that either of them had taken the matter up with counsel?

Mr. Friedman: Wait a minute. I object to that.
The Court: All right.
The Witness: I did.

Q. 99. Now, for the purpose of refreshing your recollection, if in doubt, I will show you Exhibit II and ask you whether, because of the date of that letter and the portion I am reading, you are satisfied that you learned of that bowing at some time, and if so, does that help you to fix the time?

Mr. Friedman: I object to that.
The Court: I will allow it and save your exception.

A. It must have been before this.
Q. 100. And by 'before this' you mean what date?
A. Before the month of August."

The June 25th letter was inaccurate in referring to the flywheel bearing. It was the 16" bearing that was giving trouble, that is, the flywheel shaft bearing.

"Q. 101. Now in Exhibit DD Mr. Ohl says, 'An ordinary machinist should be able to take down the flywheel shaft.' Is that the flywheel shaft upon which the flywheel bearings and connections with it are mounted?

A. Yes, sir.

Q. 102. And I think you said to Mr. Friedman when you [fol. 83] read Exhibit DD you learned that Mr. Ohl had understood your complaint?

A. Yes, sir."

"Q. 103. Now, you can understand how anybody reading Exhibit CC, anyone having any mechanical learning, could have understood that trouble was limited to the flywheel bearings and not transmitted through the shaft to the disc?

Mr. Friedman: Just a minute.

Mr. Gallagher: That is the whole point of this examination, that this letter was misleading, your Honor.

The Court: I will allow it and save your exceptions.

The Witness: What is the question?

[The question is read.]

A. No."

"Q. 104. As a matter of fact, does that bending itself take any great stress in that operation?

A. The first bending, in my estimation, don't take as much as setting the stock. You can bend a piece of stock and let go and it will go back. You have got to put in a form to stay there.

Q. 105. And take that spring out of it?

A. Yes, sir."

A piece of metal that was bent for me at Newark was bowed when it came out. I had Ohl send that piece of metal to me with the machine. I didn't save it. The piece of 3/8ths material bent at Newark was not bent to a 90-degree angle. I didn't examine the piece at the time close enough to observe that it was with a copper back as I now see it is.

At the time I wrote Exhibit JJ, letter of August 25th to Ohl, I knew all about the matter referred to in that letter.

As a result of it, Kolarsy came to our shop on September 1st.

The copper back steel that was bent at Newark is not the kind of steel we get for stringers.

On recross-examination:

"X Q. 106. Will you mark this Exhibit TT——

The Court: Don't mark it yet until I pass on it.

X Q. 107. —in ink to show the outline of the place where the bearing in the letter of June 25, Exhibit CC, is located?

[fol. 84] The Court: That I refuse because the letter has been shown to be in error. I will save your exception."

Under Ohl's plans and specifications the bed of the machine should have a clearance between it and the foundation. When the professors came I had plugged up that clearance. I have no records to show when I did it.

I couldn't say whether or not the space between the bed of the machine and the cement foundation was plugged up with babbitt on the day the machine broke.

Ohl's representative, Kolarsy, was at the plant on September 1st and all the changes made in the bearings and housing were made after September 2d except those on the 16″ bearing made the first day we used the machine.

Robert Dunlop, called by the defendant, testified:

I am a machinist with the Boston Engineering Company, with twenty years' practical experience. I went to the Smith plant in August, 1926. I did nothing the first day. The second day we took the clutch assembly out which the next day we took to our shop.

"Q. 1. Go through from the beginning to the end with what you did.

A. First of all we had to clean out——

Q. 2. Did you take it apart? Did you take the clutch apart?

A. Yes, sir."

We found it well lubricated. Inside the flywheel, up underneath, there seemed to be brass and oil combined in there where it would fly out.

When we took it apart the brake pulley fell apart. There were a lot of flaws in it.

On cross-examination:

I can't say whether I had ever worked on disassembling a clutch assembly on a machine of that type before. I was foreman in charge of the job. I think Hovasse was present when this brake pulley broke. It was on tight and we used drawer bolts to take it off, one on each side. The next day Hovasse told me I had been driving it off the wrong way and against the key. I couldn't tell you whether or not I was trying to pull it off the wrong way. It was keyed to the [fol. 85] shaft. It broke while we were pulling it off the shaft. We found an accumulation of paste composed of oil and dust that it took us a couple of hours to clean out. Most of it was under the flywheel face. The brass filings were in the end of the face. That meant something had been cutting in that assembly and when they oiled it the oil would wash it out.

On redirect examination:

When we took it apart some of the retainer rings fell out due to friction and being worn out.

JOHN E. CARRON, called by the defendant, testified:

I am a brake operator, was employed by Smith to run the machine in controversy; had had three years' previous experience with a power brake for Osgood-Bradley Company of Worcester, who builds steel cars. I operated a 10-foot Ohl press of the same dimensions of this one except for the width between the housings. Smith hired me February 23, 1926. I helped assemble the machine. We tried out the machine for the first time the middle of April. Hovasse and I were there. Hovasse started the machine and there was kind of a rumble and he stopped. We didn't bend anything that day. Hovasse took the bearing out. That was the 16-inch bearing, the clutch assembly shaft

bearing. He found the bolts sheared off and he said something about the bearing being stuck in there. A few days later when the machine was put together again I did some work on it. I generally put the female die in the slot in the bed of the machine, put the male die in the female die, letting the hammer down gradually until we can clamp the male die to the hammer and then raise the hammer. There is no gauge on the machine for thickness of material so we adjust the hammer by estimate, allowing plenty of clearance. The hammer comes down gradually and we can stop it at any point. This is called the trial and error method of adjustment. We then take a piece of scrap of the same thickness as the metal to be bent, put it on the dies, bring the hammer down one revolution and observe if the scrap piece is bent to the right angle or not. If it isn't we lower the hammer adjustment until we think we [fol. 86] have got the right angle. If we are bending a 90-degree angle we take an ordinary square and test the angle. If the adjustment is right we start in with the regular work.

When we started on this machine we bent up risers for several weeks.

One revolution of the machine accomplishes both a downward and upward motion and the machine made about 20 revolutions per minute. There is no way to increase this speed.

"Q. 1. During that period of several weeks that you were working, what if anything did you notice that was out or wrong about the machine—if anything?

A. Well, I didn't notice anything out of the ordinary outside of there seemed to be a lot of deflection in the bed, but on short pieces, like the risers that we done, why it didn't seem to do any harm.

Q. 2. What about the shaft, if anything?

A. Oh, we did have some trouble with the flywheel shaft bearing.

Q. 3. What sort of trouble?

A. Heating.

Q. 4. And when if at all did you notice this heating—that is, during what sort of process of the machine?

A. At times we run the machine continuously. We call it feeding, and after it ran for an hour or an hour and a half or perhaps two hours it would get pretty hot."

We oiled the machine four or five times a day and those bearings that heated up we oiled more than that. There were a couple of dozen places for oil.

There was no places that required or received grease. Later on an attachment was put on to put in grease with a gun. As we went on, we kept adding grease and oil cups. That heating I spoke about didn't stop until they put in the roller bearings. We had no trouble after that. When I noticed these heatings I generally stopped the machine and told Hovasse. Frequently we stopped the machine, allowed it to cool and then started it up. That happened quite frequent before the last time we put that shaft back.

Quite a few months after we started to run the machine we started to bend long work, around 12 foot long. We [fol. 87] bent 20 foot but that is unusual length. After bending the first stringer I noticed there was quite a bow in it. I found the ends were square and the center bowed out.

"Q. 5. Now, what did you have to do to get rid of this bowing?

A. Well, we never really got rid of it. We might have got rid of a little of it by pushing the piece along on the die towards the end of the machine nearest the house, and I would square up the flange, as I went along, and sometimes we would have to hit a piece, as we call it, three or four times in order to square up the flange, and it would take out a little of the bow, but not so much as you would notice it.

Q. 6. And by hitting you mean what?

A. This same revolution.

Q. 7. This same downward motion?

A. Same downward motion.

Q. 8. About how many similar operations do you recall you have to go through on the average in order to get your angle straight and get your bowing out as well as you possibly could on a machine with a 10-foot length, 90-degree angle?

A. Probably four times.

Q. 9. Four times?

A. Three or four times."

After the piece came from the machine they took these stringers to a block and generally three men straighten

them out by peening. That condition still exists today or rather until the day I got through in January, 1929. I was present at the test when the machine broke. I don't know whether I had the 90-degree dies in or not. If I did have it in I put them in in the usual way, got a piece of 3/16ths scrap, set the machine, and then put on the piece I was to bend in the test. The hammer came down and completed one revolution for the first bend. After that I was told to turn the piece over and bend the opposite edge. I bent that edge and then again somebody said "once more", and I brought the lever down so that the edge came down gradually and bent over and the machine broke. That was on the third operation—the third revolution of the hammer. That was the 12-foot piece which is in the court room. Hovasse, Lerner and the two professors were pres- [fol. 88] ent from start to finish. After the machine was repaired I continued to bend stock on it for little over two years.

"Q. 10. At least two years. Now, just one thing more. What if anything did you notice with reference to the bowing of the product after the repairs had been done?

Mr. Friedman: Wait a moment. To that I object.
The Court: I will allow it and save your exception.

Q. 11. Go on, Mr. Carron.
A. I can't say there was any difference in the bowing.
Q. 12. That is to say——
A. It seemed to be about the same."

After the break an extra motor was put in to raise and lower the hammer because the attachment that came with the machine wouldn't work. That difficulty developed so it became clear almost from the start. We noticed it at the time. We always had some trouble with it.

On cross-examination:

The first day we started up the machine I heard a rumble on the first revolution of the hammer. We stopped the machine. Up to that time Hovasse had been responsible for oiling the machine. I don't know what oiling he did. I don't recall doing any except the main bearing over the head. Hovasse took down the 16-inch bearing, taking out the whole assembly. A few days later we started up the

machine again and from then on I was in charge of it. The 16-inch bearing kept getting hot. The flywheel bearing started to shoot brass a short time after we started the machine.

When we started we were bending risers out of ⅛ stock or 10 gauge and worked on them for several weeks. We first began on the heavier work some time after the Boston Engineering Company had been there around the first of September. Up to then we hadn't done any stringer work. Shortly after the clutch unit was reassembled and put back we started to bend stringers. I never bent anything over a ¼ inch thick, never used in operating that machine any metal heavier than ¼ inch. I was the only one in charge of operation of that machine and no one else operated it up to January, 1929. We never used or tried to use any ⅜ths-inch metal in the press. Of that I am positively sure.

[fol. 89] "X Q. 13. I am going to ask you just another thing. You say you have worked these pressed up in the——

A. Osgood-Bradley Car Company.

X Q. 14. The Osgood-Bradley plant?

A. Car Company.

X Q. 15. And did you have long pieces there?

A. Sixty-five to 70 feet long, some of them.

X Q. 16. And how heavy metal?

A. Quarter-inch up to three-eighths.

X Q. 17. And do you find that when such pieces come through the press they have no bowing in them?

Mr. Witte: Just a moment. Are you now referring to Osgood-Bradley?

Mr. Friedman: Yes. I am testing this man's experience.

Mr. Witte: Then I am objecting to the question.

The Court: I will exclude it.

Mr. Freidman: Will your Honor save my exception? Shall I make an offer of proof?

The Court: No, you needn't.

Mr. Friedman: Excuse me.

[Discussion at the bench.]

The Court: I refuse it and will save your exception."

Peening is hammering metal to straighten it out or put a bend in it. I don't recall ever having seen it done other than in Smith's.

"X Q. 18. Well, do you know from your own observation or experience what is the proper condition with reference to the bed of the press and the foundation?

Mr. Witte: To that I object.

The Court: I will allow that.

The Witness: On a ten-foot—they always as a rule—that the operator should keep the underneath part of the base clear on a ten-foot.

X Q. 19. Now, by 'clear' you mean there is a clearance?

A. There is a clearance underneath the bed."

From the first, in April, in operating the machine I noticed the clutch was wrong because it wouldn't properly engage or lower the head. That the 16-inch bearing heated [fol. 90] up. I noticed that the male part of the 90-degree die was wrong as soon as I first saw it, shortly after they came in in March, before we used the machine. I reported that to Hovasse and Lerner and told them that taking it for granted these dies were to be used to bend 3/16ths and ¼-inch stock according to my experience, the male die should have a radius on the edge that fits into the female die of at least or about equal to the thickness of the stock intended to be used. I used this 90-degree die when we done stringer work around the first of September. I might have used it before then on ⅛-inch stock but not for stringers. The male die then, as when I first noticed it, had a sharp edge where it fits into the female die. I complained to Mr. Hovasse and Mr. Lerner about that and told them it should have a radius on it to help us out in making a better bend. I made no changes in that die. The effect of the die as it was constructed "would be that the die couldn't get down far enough in pushing the metal to have these surfaces press up against the side, thereby helping the flange". We were using that die when the machine broke.

"X Q. 20. And wasn't it your desire to press that male die down further that brought about the breaking of that press?

A. I didn't do any different in regards to the test than I done on any other stringer work.

X Q. 21. Yes, we'll say that is so. But didn't you feel, didn't you have it in your mind that this particular male die didn't come down quite far enough to produce a right angle, and that you therefore felt you had to press it down a little further than you would have if it had been built according to your ideas with a greater radius?

A. I didn't use any more pressure on that test piece than I generally used on the regular line of stringer work. It was a regular job."

On redirect examination:

In my experience it would be better to have this sharp edge of the male die curved to a radius rather than pointed.

"Q. 22. In the particular machine in question, did or did you not have difficulty in bending one-quarter inch stock at a 90-degree angle without bowing?

[fol. 91] Mr. Friedman: I object.

The Court: I will allow it.

The Witness: Will you repeat the question again?

Mr. Witte: I think I ought to put it again but a little more intelligently.

Mr. Friedman: Your Honor will allow my exception?

The Court: Yes.

Mr. Witte: Well, we will put it again. Mr. Stenographer, will you repeat the question? See if you understand it. [The question is read.]

A. Yes, sir.

Q. 23. Now, what do you say in your judgment would be the probability of your being able to bend three-eighths stock at a 90-degree angle without bowing?

Mr. Friedman: I object to that.

Q. 24. In view of your experience on quarter-inch stock?

Mr. Friedman: I object to that.

The Court: I will allow it and save you exception.

The Witness: I don't think that the machine could bend three-eighths stock over a die two and one-quarter inch wide.

Mr. Witte: Never mind the die. We are talking about the three-eighths inch stock.

Mr. Friedman: Excuse me. He finished his answer.

Q. 25. Have you finished your answer?

A. I never done it, but I don't believe it could in one piece without probably sticking or doing something like that.

Q. 26. Now let me ask you this question: Whether or not in your opinion it would be possible on that machine, with the experience you had with it, to bend three-eighths inch stock at a 90-degree angle on that same die that you used for your quarter-inch without showing bowing?

Mr. Friedman: I object to that.

The Witness: No, sir.

Mr. Friedman: Save my exception.

The Court: Yes.

Mr. Witte: I may have the question?

[fol. 92] The Court: Yes.

Mr. Witte: The answer is no, sir. You said no, sir."

On recross-examination:

I never did any stringer work until September or October, 1926. This die was a 2¼-inch die. If it were a 3-inch die it would be a different question altogether with that 90-degree work.

Mr. Friedman: I forgot one thing, if your Honor will allow me to ask it.

The Court: Yes.

X Q. 27. Did you know that these iron pieces that you press are harder in some places and soft in other places?

Mr. Witte: One moment. I don't know whether this witness is qualified to speak of such matters.

Mr. Friedman: That is what I am asking him, if he has that knowledge.

The Court: How is that competent at this stage of the game?

Mr. Friedman: It isn't, but I asked your Honor's permission to put something in I had forgotten.

The Court: And I allowed you to put it in. I will then rule it out. Excluded, and I will save your exception.

William J. Dubois, called by Smith, testified:

I am president and general manager of the Boston Engineering Company, engaged in general machine repair work.

I called at the Smith plant at Mr. Shannon's telephone request. Exhibit KKK, as follows, was then introduced:

EXHIBIT KKK.

"August 16th, 1926.

George T. Shannon, 18 Tremont St., Boston, Mass.

Re A. L. Smith Iron Works. Our order #23557

DEAR SIR: We enclose copies of letters received from the above firm dated June 25th, 1926, and the 13th inst. and our replies to same dated June 28th, 1926, and even date, which are self-explanatory.

Please have some first-class machinist (no automobile mechanic) call at their plant and examine the flywheel bearing, which doubtless has not been properly oiled. This [fol. 93] is an American Roller Bearing, and, if it or any of its parts have been chewed up, it is because of carelessness of their workman not properly oiling the same.

Have the machinist you engage take off the flywheel bracket and remove the flywheel, all of which is an easy matter by using a ton tackle overhead, and then wipe off all dirt with kerosene, file off the burrs, and then make a careful report of what he found. Then replace the different parts and thoroughly oil and send us his bill for same with his report. A machinist from one of the large manufacturing plants in your vicinity would possibly be the best.

Their next note is due the 1st of September, which we have already given to our foundryman who will place the same in his bank for collection, and if the A. L. Smith Company does not pay this note, you will have a chance to sue him on same, as we will recommend your office to our foundryman.

Very truly yours, Geo. A. Ohl & Company."

Enclos. GAO. Jr.-S.

GEORGE T. SHANNON, called by Smith, testified:

I am a member of the Massachusetts and Federal Bar; represented the Ohl Company of Newark in 1926.

ARTHUR L. TOWNSEND, called by Smith, testified:

I am an instructor in the Mechanical Engineering Department in the Massachusetts Institute of Technology, teaching kinetics, automatic and applied mechanics. A man from the A. L. Smith Company came to our Division of Industrial Cooperation and Research and was referred to Professor Swett for information or advice about this machine and as I am Professor Swett's immediate associate I came into the particular work myself. About October 8, 1926 Professor Swett and I went to the Smith plant and inquired for Hovasse and Lerner, who were not there, went down, looked at the machine, asked them to bend a piece of plate to show us what the trouble was, a piece 10 or 11 foot long and 10, 11 or 12 gauge thick, about an 1/8th inch thick. The piece was bent, taken from the press, and showed a decided bow in two directions. I should say that the [fol. 94] bowing was somewhere between 3/16ths and 5/16ths of an inch. We left and returned on October 15th to take some measurements, went down to the machine with Lerner and Hovasse to find out if there was, and if so how much, deflection in the bed. A piece of 1/8th stock was put in the machine, one side was bent while we noted the behavior of the dial gauges we had had installed to measure the deflection of the bed. The operator started to bend this plate. We noticed some movement of the dial needle. I don't recall the figure; it might be 60/1000ths or 30/1000ths of an inch. That piece came out bowed similar to the one we saw the week before. Before we had the piece taken out of the machine, we had the operator make some repeat strokes while the piece was still in the die to see if there was any difference in the dial readings. As I recall it, they were a little less in the repeat strokes than in the original case.

We asked them to bend a heavier piece and a piece of number 7 gauge was put in the machine and that is 3/16ths. The operator put it in the machine. We were observing the dials and one side was bent. Then we asked him to come down on it again so we could watch the dials and I think he came down on this side may be one-half dozen times. We noticed the bed had considerable movement, up and down. This we noticed both by instrument and vision. We speculated among ourselves as to whether there was

an actual deflection of the bed or whether the whole bed was moved up and down. We then had the plate turned over and bent the other side. Then we asked to have a repeat stroke and on the first or second repeat stroke we heard a loud explosion, looked around and found a bad break in the stanchion to the left of the operator. We looked at the broken stanchion and as it was only separated by a 1/4 inch we couldn't see the inside condition. We chipped out a few samples from the edge of the break thinking to put them under microscopic examination to see what was the condition of the metal. We went to the office when Professor Swett dictated a statement covering what had happened that afternoon. I visited the plant once or twice [fol. 95] after that. I gave study to the problems of bowing and what caused the machine to break during that fall. I did not then compute the power required by the hammer, taking that from other sources. Since November 1926 I have made further study of the machine, its operation and cause of the break. In my opinion the machine could not bend 3/8ths inch material of 12 foot 6 inch lengths on dies the female member of which was 3 inches across. It might bend it once or twice or for a week or a month, depending upon frequency of operation, but sooner or later the machine would break. Professor Norton of Harvard submitted to Smith a report of his investigation on the load required to bend and set 3/8ths inch steel 12 foot long on this machine which he computed at 800,000 pounds. In our original computations of the machine we used that figure and found a reasonable factor of safety in the sections where the machine broke. A year ago [date of testimony April 24, 1929] at Lerner's request I called at Mr. Witte's office and met Perkins, a machine manufacturer, with whom I discussed this machine and as a result I further studied these loads or stresses, studied up and read on the subject and reached the opinion that the load required to bend 3/8ths plate was from a 1,700,000 to 2,000,000 pounds instead of 800,000. I understood the figure of 800,000 arrived at by Professor Norton was simply what he obtained from putting small pieces of plate in the ordinary testing machine—what we call the ordinary laboratory testing machine which applies the load very slowly indeed. On that basis the factor of safety was about two and one-half, which is altogether too low in machines of this general type,

which should run from 6 to 10 or 12 with 7 as a fair average. I determined this factor by a process of physics and applied mechanics assuming the ultimate strength of the material used in the stanchions, made of cast iron, at 20,000 pounds a square inch, a fair average for cast iron. [In about six pages of transcript the witness explained how he arrived at these results.] An additional reason why the factor of safety of 2½ is altogether too low, is due to the fact that this is what is known as a dynamic machine, where the load is applied through moving parts, rather than a [fol. 96] static machine, where the load is applied by hydraulic pressure.

I heard Mr. Wilhelm's testimony with reference to variation in thickness of steel. If the hammer were adjusted precisely for 3/8ths inch material and there was a 10 percent variance in plate a stress on the machine would be effected. If there is more material in the machine than the machine was set for and the machine is operated there is more stress in the end frames. If the material is too thick the machine will stall. If it is only a little thicker the machine will operate with slightly different loads. I *I* know no way of calculating those excess loads. Because of this condition a reasonable factor of safety is required. Three-eighths steel requires greater power than 3/16ths. When you bend a piece of plate and bring the hammer down on it the plate bends and in order to be sure to get a 90-degree bend there has to be a certain amount of squeeze or pressure at the bottom of the die to set it. That occurs on the first blow. When you come down on the second blow you push the material a little, not so much as the first time, but with some pressure. That pressure depends on the elasticity of the different parts of the machine. The trial and error method of adjustment is the accepted method on machines of this type.

"Q. 1. Now, have you made some study of these presses as a result of this inquiry and to prepare yourself to testify with reference to the workmanship—what is and what is not proper bending and bowing and that sort of thing? In other words, as to——

Mr. Friedman: Let him answer that question, won't you please?

Q. 2. If it is clear to him. I don't want to have him answer a question that isn't clear.

The Witness: Will you repeat the question, please, Mr. Stenographer.

[The question is read.]

The Witness: Yes.

Q. 3. And as a result of that have you an opinion as to whether or not this variation of this bowing that you have described in work produced in this press was reasonable, [fol. 97] workmanlike bowing or not?

A. It looked very unworkmanlike and a very unreasonable amount of bowing."

Friction clutches are not satisfactory for that type of work. Our experience has been that friction clutches are not satisfactory mechanism for that particular sort of work; they never work when you want them to and they always stick when you do not want them to. Even if the clutch was thrown out *of* the power from the rotating flywheel would continue. The clutch is between the flywheel and the gears operating the machine.

"Q. 4. In your opinion did the placement of that babbit affect the structural safety of the machine?

A. No, I don't think it did.

Q. 5. What effect did it have?

A. It had the effect of putting no flexibility in the bed, no chance for the bed to move any way downward, or the end frames to come up, and that brought about the loosening of the holding down bolt.

Q. 6. As that machine was constructed and designed, was support under the bed provided for in its foundation?

A. No."

Subject to Ohl's exception he testified:

There was no safety device on the machine as there are usually on machines of this type.

"Q. 7. Have you studied brakes and power presses and machines doing this type of work, punching and shearing, that type of machine?

A. We use them for instruction purposes in our classes regularly, and for the last ten years.

Q. 8. You mentioned also having experience in the field, passing upon factory construction for the insurance company?

A. Yes.

Q. 9. In the course of that work did you give attention and thought to the presence or absence of safety devices in machines?

A. As my work made it necessary.

Q. 10. Now, I will ask you whether or not——

The Court: Now, I still want another question—whether or not in such machines as put on the market, as generally used, there are safety devices? That's what I want to know.

Q. 11. Yes. In such machines as this machine, as sold commonly in the market, are there safety devices?

A. There are.

[fol. 98] The Court: Now, you may inquire and I will save your exception.

Q. 12. Now, in your opinion was this machine, constructed as it was without a safety device, proper construction?

A. I don't consider it was."

In designing a machine, we calculate the normal loads imposed upon the machine and include a reasonable factor of safety in designing the part. In order to prevent the rupture of some vital part of the machine in some circumstances a relief or safety device is put in the machine which of itself will release itself or -et go and prevent damage to some more important parts of the machine.

On cross-examination the witness testified:

Professor Swett is really head of the department in which I am instructor. I made a written report and gave a copy to Ohl's representative and Smith's representative. That was dated November 22, 1926. In making it I had a copy of Professor Norton's report to the Smith Company dated July 12, 1926. Professor Norton is one of the professors in the department of mechanical engineering at Harvard. That report is as follows:

EXHIBIT 19

"July 12, 1926.

A. L. Smith Iron Works, Chelsea, Massachusetts.

Attention of Mr. Lerner

GENTLEMEN: At your request I have made an estimate of the probable load which could safely be allowed on your Ohl press if used as a multiple punch machine. I am able to report as follows:

1. Manufacturer's Statement.

The manufacturers of this press having stated that the machine was capable of cold bending steel plate 12 feet long and 3/8 inch thick to a 90 degree angle, it was decided to make tests to see how much force would be required to do this. I find the results to be as follows for a 3/8 inch plate, 12 feet long:

[fol. 99] With a rather sharp pointed die 792,000 lbs. or 396 tons.

With a blunt die 888,000 lbs. or 444 tons.

To be on the safe side, I shall assume the manufacturer's statement to be equivalent to the lower of these figures—i. e. 792,000 lbs. or 396 tons.

NOTE.—The steel used in the test was 3/8"x4"x12". The readings of the testing machine were for the length of 12". By multiplying these readings by 12, the above figures were obtained. The steel was reported by Mr. Lerner as open hearth steel with 15 to 20 points carbon. Our test showed it to have Brinell hardness number 137, which is a good check on carbon content.

2. Strength of Machine Parts.

I have checked up two parts of the machine to see if the stresses induced therein by the assumed load of 792,000 lbs. are reasonably safe for the materials. The two parts are (1) the cast iron cross beam which pushes directly down upon the work and (2) the two large gear wheels at the top of the machine on the slow speed shaft with the two eccentrics.

Stress in Cross-beam.—This beam is approximately 150 inches long and 3′ 10½″ deep at the middle. The load is applied by the two eccentric rods at the top at two points approximately 30″ from each end. I estimate that the bending stress induced by the load of 792,000 lbs. is within a safe value for cast iron. Also the shear is safe for this load.

Stress in Large Gear Wheels.—Each of these two wheels have 128 teeth. I estimate that the bending stress in the teeth induced by the load of 792,000 lbs. is rather high for ordinary cast iron, but safe for a good grade such as is ordinarily used for cast-iron gears.

3. Motor Load.

If the above load of 792,000 lbs. is put on the machine, I think the motor load is the governing factor. It is practically impossible to calculate in advance what current will be demanded. In fact, the manufacturers of such machines [fol. 100] probably rely on their own experience with previous machines of like design, and allow a liberal size of motor. Hence I would suggest that you go ahead and build the fixtures you intend to use, assuming that the motor is adequate.

When you have them ready simple tests could be made of the electrical imput while they are in use by means of electrical instruments which would measure the imput.

4. Table of Punching Loads.

We made tests to determine how much force was required to punch holes in steel of same carbon content, and from these tests computed the number of holes which could be punched if the same total load were reached (792,000 lbs.) as per manufacturer's statement.

Tests showed the following results:

Punching one 9/16″ hole in a 3/8″ plate requires 34,800 lbs.
" " " " " " 3/16″ angle " 18,600 "

By interpolation I estimate that
Punching one 9/16″ hole in a 1/4″ plate requires 24,000 lbs.
" " " " " " 5/16″ " " 29,400 "

Holes of other diameters would require punching force proportional to the diameter in each case.

From these figures, I have prepared the table below, in which are shown the number of holes which could be punched if the total force is 792,000 lbs. as stated by the manufacturer.

	Diameter of holes		
Thickness of Plate	3/8"	1/2"	9/16"
3/16"	63	47	42
1/4"	49	37	33
5/16"	40	30	27
3/8"	33	25	22

I would suggest that you arrange your multiple punches so that they go into action successively; that is, one set entering the metal slightly before the next one. Also try [fol. 101] to have the punch point protrude not more than 1/16" thru the hole at the completion of the stroke.

If you desire any more work done on this problem, I shall be glad to take up the matter with you.

Respectfully yours, Arthur E. Norton. Arthur E. Norton."

AEN/KEM.

I accepted Professor Norton's figures in making my November, 1926, report. About four months ago [testifying on April 25, 1929] I made tests on dies I got from the Smith Company, getting unsatisfactory work, using 3/8ths-inch stock about 12 inches long, making four or five tests. These I made last January getting on the first piece a reading of 68,000 pounds, the second piece 68,000 and the third 77,000 and the fourth about 70,000. I was using a *a* female die 2¼ inches across the corner. I made no experiments on a 3-inch female die. The pressure required to bend metal across a 3-inch die is different from the pressure to bend material across a 2¾-inch die but the pressure required is no different between the two dies in setting the material at the bottom of the die, taking less pressure to bend metal on a 3-inch than on a 2¼-inch die. In my opinion, it makes no difference in the pressure required to set the material in the bottom of the die. It makes a difference in the effort required to crack the plate and bend it, but the final pressure at the bottom is the same approximately. I can't tell whether in my test I used either a blunt or a sharp pointed die. It wouldn't make any difference in the amount of force required to bend the material but it would in the amount

of force to set material to a 90-degree angle. I made no calculations about the Ohl press based only on my own experiments and figures.

"X Q. 13. All right. That is, if I have got this in mind, we now have the elements that you used in this opinion of yours: Something Mr. Perkins told you, something you read in a book, something you read in a magazine article, and, in part, some calculations which you hadn't gone through with to a final conclusion on your own experiments. That's fair, isn't it?

[fol. 102] A. I didn't get the first part of the question. I thought you had finished when you hadn't.

[The question is read.]

A. In our work that's the way we always get our facts.

X Q. 14. No.

The Court: He asks you if that is a fair statement.

The Witness: Yes, that is a fair statement."

Even if the operator of the machine is skillful enough, he needs one of these fool proof devices.

I did not examine the 25-inch flywheel clutch, its mechanism or housings. A friction clutch even though properly adjusted does not serve as a safety device except under rare circumstances.

The factor of safety I computed for this machine would be about 3½ assuming a load of 1,700,000 pounds. On Professor Norton's figures it would be approximately 7, the average factor of safety for that sort of work. In my figures I assumed a tensile strength for the cast iron stanchions of 20,000 pounds to the square inch. I didn't take any actual samples out of the side frame. If I had done so I could have determined the actual tensile strength. If the tensile strength was 24,000 instead of 20,000 my factor of safety would increase in the direct ratio of 20 to 24.

With reference to my report of November 22, and my criticism of the female die, I have never built any dies, have never done any practical work with dies, have had no previous experience with this kind or type of die and made no experiments about the construction of dies or to determine the breaking point of these dies. I made calculations concerning the side walls of this female die, assuming a

pressure of about 400,000 pounds on each side, a half of the 800,000 pounds. If I used 2,000,000 pounds instead of 800,000 the figures would probably show that the dies should have broken long ago. In these die calculations I assumed 3/8ths-inch material on the die. I don't know whether or not that die was made for 3/8ths-inch material. It would stand up for 1/8th material with a certain amount of yawning and it might stand up for a 1/4-inch material for a time but with excessive yawning. My opinion would [fol. 103] be different if I knew that that die was built for an 1/8th- and 1/4th-inch material as a maximum.

I did not have called to my attention the statement contained in Exhibit 18 that this die was "to be made as narrow as possible as it will only be expected to bend metal a ¼" thick maximum." I have seen the repairs the Smith Company made on the machine in the way of yokes, bars and supports. My opinion was that the repairs could best be made through thermite process welding. Had that recommendation in my report been followed the machine would have had the same width and could have used the same size material as before the break. I had nothing to do with the repairs actually made. I have observed the manufacture of this class of material in steel fabricating plants, observing the product, but can't state from my observation how the product from this press compared with the products of other manufacturers with regard to bowing. I don't know from my own observation whether or not peening operations for that class of work are performed by other manufacturers. My criticism of the bowing was based on what the builders theoretically wanted as compared with the product which I saw in its preliminary state.

[The report in question was then introduced as Exhibit 20, as follows:]

EXHIBIT 20

"Mr. Martin Witte and Mr. Ernest J. Sanderson, c/o Mr. Martin Witte, Boston, Mass.

In re Investigation of Ohl Press at A. L. Smith Iron Works

GENTLEMEN: At your request we submit the following report on this machine, together with recommendations for correcting the existing trouble.

A preliminary visit was first made to this plant to acquaint ourselves with conditions. At this time we saw a piece of approximately #12 gauge material about 10 or 11 feet long bent in the press. It was plainly evident that the results were not satisfactory. There was a decided bowing of the plate, in two directions, after bending. The directions of bowing were opposite to the direction of the [fol. 104] bending operation. Owing to the absence of Mr. Lerner and Mr. Hovasse, arrangements were made to make some tests with respect to deflections, etc., one week later.

At this time some bends were made on #10 gauge stock with the same unsatisfactory results, namely, the plate show- a decided bow. Indicator readings taken on the bed showed what seemed to be excessive movement with respect to the floor. A piece of #7 gauge was then tried and after making two bends, and several repeat strokes in the first and one in the second, the end upright or stanchion, at the opposite end from the motor, broke in two places.

A third visit was made on November 12th, to take some measurements and other data to assist in drawing conclusions as to the unsatisfactory operation of the press.

Of prime importance in this investigation there seem to be four important questions:

(1) Did the machine produce unsatisfactory work?

(2) What causes the production of the poorly fabricated work?

(3) What caused the machine to break?

(4) How can the trouble be remedied?

These questions will be discussed in the order given.

Question No. 1. Did the machine produce unsatisfactory work?

It was plainly evident that at the time during which he saw the press in operation, the work produced was not straight (lengthwise) and the corner of the "90 degree" bend through the central portion of the work was not well defined, nor did it appear to be 90°. Nearing the end of the work, this latter condition was not so marked. In fact, at the ends the corners seemed to be well formed. The lack of alignment (bowing) and the malformation of the corner portion through the centre increased indirec-ly with the thickness of the plate and also directly with the length of plate bent.

[fol. 105] On the short lengths of light material the lack of alignment etc., while present, was not of sufficient magnitude to interfere seriously with immediate uses or operations to which the material was put. On heavy material and with long lengths of all thicknesses, the malformation described required that the work be straightened elsewhere before subsequent operations could be performed.

Question No. 2. What causes the production of poorly fabricated work?

We are firm in our belief, that the principal factor in producing the unsatisfactory work, is a poorly designed and weak die.

A careful analysis of the operation of the machine, together with calculations based upon load values supplied by Prof. Norton, convinces us, that with respect to excessive deflections, there is nothing radically wrong with the machine.

It is true as mentioned in the introduction, that during the tests, indicator readings showed excessive movement with respect to the floor. This we believe to be a movement of the whole bed up and down horizontally, due to not setting firmly on lower ledges of the end frames or uprights. This condition has been brought about by the tentative but ill advised arrangement of the heavy bedding under the center of the bed, and the subsequent lifting of the end frames when loads were applied. Some loosening of the ends of the bed with respect to the end frames was bound to occur. This movement of the bed is not to be confused with deflection which occurs when the ends of a member are held rigid and the centre if deflected downward, due to the load supported or resisted. From the operation of the machine this type of movement or deflection could not occur.

Referring again to the die, attention is called to the construction of the female portion of the die. The supporting side walls are excessively thin, especially when it is considered that part of them have been cut away for the plac- [fol. 106] ing of tool steel inserts. Investigation of this condition from the theoretical standpoint discloses such results as to lead to no other conclusions.

Question No. 3. What caused the machine to break in the end frame or upright.

The machine broke for two reasons:

First an excessive load was applied and second because there was no efficient safety device to operate, when the machine was overloaded.

Examination of the breaks shows that material is of frail composition, and apparently homogeneous. Further, the cross sectional area at the breaks is sufficient to withstand the maximum operating load of the machine, with a reasonable factor of safety. The conclusion which must be drawn is that an excessive load was applied.

An excessive load would be easily applied if the adjustment of the position of the stroke of the plunger were such as to give to the closing of the die, an amount very slightly in excess of the proper distance required for thickness of stock to be bent. This could have been very readily brought about, by a desire to "squeeze" the plate an additional amount, to try and offset the bowing condition produced in the bent plate, previously described. Also the repetition of this slight excessive closing of the die from previous operations had weakened the machine in a vital spot and eventually caused the rupture.

To our minds however, the most serious indictment against the design and construction of the machine, is the lack of proper safety device. It is an accepted fact that machines of this type when properly designed should have an efficient form of safety device which would let go, when excessive loads were applied in the machine, and thus save the more expensive and vital parts from serious damage rupture. The more commonly used devices are shear pins and shear keys, located where they are easy of replacement, [fol. 107] and having factors of safety of about 2, to ensure their failure before other parts of the machine. Friction clutches and the like are very undesirable owing to their unreliability of operation or lack of operation.

Question No 4. How can the trouble of defective work be remedied?

To our minds a properly designed die will eliminate the question of defective work. The female portion of the die should be made of heavier material, that is wider, so that there will be at least a thickness of one inch of solid metal outside of the tool steel inserts, preferably more. Also the die should be made to set directly upon the bed, without any secondary support, especially of the I beam type such

as is now used. The firmer the die, and the more rigid the connection between the due and the bed, the less chance is there for excessive deflections.

Since the angle of the finished work is to be 90° the angle of the die should be a few degrees less, to allow for spring back after bending.

Also the bed should be readjusted to set firmly on the ledges provided for the purpose and all sub-supports etc., should be removed from the centre of the bed.

The end frame we believe, can best be repaired by welding, through the Thermit Process.

In the following we have briefly summarized the important points of this report.

First. The machine up to the time of breaking did produce unsatisfactory work.

Second. The defective work was due chiefly to a poorly constructed die which did not give proper backing when the plates were bent.

Third. Although the main frame broke due to the application of an excessive load, such an event would have been prevented had the machine been equipped with an efficient safety device.

[fol. 108] We have also been informed by members of the Smith Organization concerning certain other features with reference to the design and construction of the press, which would lead us to believe that the manufacturers had not exercised the best methods in designing or building the machine. While we believe the sources of this information to be reliable, we cannot express these opinions as our own.

Verbal expression of the ideas contained in this report may be of assistance, in clarifying any of the points discussed, and should you desire a conference on this matter we would be pleased to serve you.

Massachusetts Institute of Technology, Cambridge, Mass., Nov. 22nd, 1926.

Respectfully submitted.

George W. Swett, Arthur L. Townsend."

On redirect examination, Mr. Townsend testified:

Welding the breaks would not have increased its original factor of safety. The edge of the dies do not take the ulti-

mate load of the machine as the seat of the load is at the bottom of the die. I used the whole load in calculating the edge. The whole load is used in setting and not in bending the material. I understood from Professor Norton's report his tests were based on one-foot specimens. To bring the result up to twelve feet we multiplied by 12. He used a very slow motion laboratory machine, much slower than the machine in question. Accordingly a factor of 2 is generally implied. Multiplying Professor Norton's load of 800,000 pounds by 2 I got 1,600,000 pounds. In my own tests I got substantially the same readings as Professor Norton, but I multiplied them by 2. With the construction of this 90-degree male die the action is down on the sides and in the corner of the female die. It makes no difference to the load on the machine whether the female die is 2¼ inches or 3 inches across.

On recross-examination the witness testified:

In my tests I got roughly the same figures as Professor Norton, and from their result arrived at approximately the [fol. 109] same load of 800,000 pounds. I multiplied that figure by 2. The factor of safety I found based on a 800,000 pound load was approximately 7. Using a 1,600,000 pound load it would be 3½.

"The effect of a thick piece of stock in there over what you originally set the dies for has the same effect upon the machine as maladjustment of the hammer."

"X Q. 15. Over stress?

A. Puts an overload on the machine.

X Q. 16. Now, that is something that the operator of the machine in his experience and skill and his 'trial-and-error' proposition is supposed to meet and overcome?

Mr. Gallagher: To that I object.

X Q. 17. Is it not a fact?

The Court: All right.

The Witness: Can't you repeat the question? There is one point I just missed in it.

X Q. 18. Will you please read it, Mr. Stenographer? I will put it again. It is easier this way: It is part of the job of the operator of that machine with his experience

and skill to make the adjustment of the dies in the hammer from time to time to meet this commercial variation in the steel plates, isn't it?

A. Do you mean he has to make adjustments whenever a new piece of steel comes along?

The Court: What he means is that an experienced and proper operator will allow for that in making his adjustments. That is the question.

The Witness: I will have to answer that by an explanation.

X Q. 19. Can't you answer that yes or no?

A. I don't think I can conscientiously."

Hiram A. Lerner, called by Smith, testified:

I have been with A. L. Smith Iron Works for sixteen years; am in charge of production and purchasing for the last eight or nine years; am vice-president of the company; am familiar with the Ohl machine since it came to the plant. That machine first was called to my attention in April, 1926, in connection with heating of the bearings. I next had to do with the machine around the first of [fol. 110] August. I saw Kolarsy at our plant on September 1st, and went with him to the machine and talked with him about the flywheel or clutch assembly which the Boston Engineering Company had taken out. I told him the serious part in my mind is the fact that the stock doesn't come out straight. I remember seeing Mr. Hovasse hand Mr. Kolarsy a level, and saw Mr. Kolarsy put it on the machine. I asked whether the machine was set up all right, and he said: "Yes; she is set up all right." I asked: "Is she level and plumb?" He said: "Yes, she is level and plumb." I asked him whether he had inquired from Mr. Hovasse how he intended to fix the clutch assembly up or that flywheel, and he said: "Yes." I said: "Is that all right?" He said: "Yes; that man knows what he is doing", or some expression like that.

I have charge of the factory cost records. From the cost sheets from the week ending August 26th to the week ending September 7th, our labor costs for repairs on the flywheel clutch assembly show a labor cost of $285.72, a

total of direct costs, including labor and materials and indirect costs of overhead, of $673.44. The repairs on the broken left stanchion for the week ending October 21, 1923 through the week ending November 25, 1926.

"Q. 1. What was the total cost of that?

Mr. Friedman: Does your Honor allow that?

The Court: Yes, and I will save your exception. Go ahead with the total.

The Witness: $1,858.31."

The witness testified that he had records showing the production costs of stringers made on the Ohl press for the period beginning with April, 1926 to April, 1929.

On cross-examination the witness testified:

I am a technical man in my own business, the iron business, in its general quality and quantity, fairly familiar with the manufacturing process, in charge of production and purchasing and occasionally selling. Being shown a bill from the A. L. Smith Iron Works of October 11, 1927 to J. F. Dailey and a piece of tracking, he testified: I think I remember the order and I think that [referring to the tracking later introduced as Exhibit 23] looks like the [fol. 111] piece of tracking the order called for and the one called for by the bill. Simpson is our shop superintendent. I may have introduced Dailey to Simpson. I don't recall whether I said anything to Dailey about this Ohl press doing good work. Dailey came to me as a prospective customer with certain work that he might want us to do.

[The bill in question was marked for identification "Exhibit 21".]

In the cost figure of $673.44 indirect cost or overhead was figured $274.50. I don't recall that I got any figure on how much it would cost to make repairs as suggested in Professors Swett and Townsend's report.

On redirect examination the witness testified:

We discussed the professors' recommendations among ourselves. Welding would require the taking down of the machine, then welding the broken part, then reassembling and relining the machine.

On recross-examination he testified:

The figure for the October and November repairs of about $1,800 included $650.38 for labor, $536.53 for materials and $671.40 for overhead.

FRED PERKINS, called by Smith, testified at follows:

I am a manufacturer of power presses and shop metal machinery, in business thirty-five years, with the Perkins Machine Company at Warren, Massachusetts, making power presses. I have studied power presses, their operations, mechanisms, construction and all matters concerning them. I have been in touch with the market and other presses on the market.

"Q. 1. And among them the Ohl press?

A. Why, not exactly, only just some catalogues that I had seen.

Q. 2. That is what I mean. In some cases through catalogues and literature?

A. Literature.

Q. 3. And in some cases by direct observation?

A. Observation; yes, sir."

We have made presses up to over 2,000,000 pounds ca- [fol. 112] pacity. I have made stress calculations, safety factor calculations and safety device calculations based on construction and material used, considering the strength of material and the development of power to the point of action, considering the variation of the material in its density, softness or hardness and thickness, considering operation with regard to the proper setting of material.

A power press of normal type, of cast iron, has its factory of safety approximately six to one. In setting the press the trial and error method is used, the error coming in through the variation of the commercial material and in its density, a condition generally known to the trade.

"Q. 4. I see. Now, among other methods of overcoming any effect of that kind resulting from variance, whether or not you have in your course of studies considered safety devices?

A. I have.

Q. 5. And I will ask you whether or not that is proper construction in your opinion in a metal-forming press to operate it without or cause it to be operated without some sort of a safety device?

Mr. Friedman: Wait a minute. I object to that.

The Court: Hadn't you better detail the size of it a little?

Mr. Witte: Yes. We will now assume that the press, this metal-forming machine, is called upon to bend anything up to three-eighths commercial steel in dies 2¼ inches across and downward at angles of 90 degrees or less.

Mr. Friedman: To that I object.

The Court: I will allow it and save your exception. Is it proper to use such a die without a safety device?

Mr. Witte: Such a machine?

The Court: Such a machine.

The Witness: With proper allowances in its construction, yes.

Q. 6. Proper allowances in what?

A. In its construction.

Q. 7. What do you mean by that?

A. I mean by that by additional material of stiffer nature, either being inserted or shrunk into the casting of which this machine may be designed.

Q. 8. In other words, if the factor of safety is great enough?

A. Is great enough.

[fol. 113] Q. 9. What is the least factor of safety that you can state such a machine can get along with without safety devices?

A. Six to one."

I saw the Ohl press at Smith's plant in March, 1928. Its left stanchion or side frame was broken or cracked. I measured the cross section area at the breaks.

"Q. 10. And did you make any tests to find what class of metal it was that was in those stanchions?

A. Only from observation.

Q. 11. And what would you say from observation it was, not the quality, by the class?

A. Cast iron.

Q. 12. Do you know anything about the quality of that metal from what you saw?

A. That would be hard to tell.

Q. 13. Now, what was the class of cast iron, if you can tell us?

Mr. Friedman: Wait a moment.

Q. 14. Are there different classes?

A. There certainly are.

Q. 15. What was this particular class?

A. Why, from my observation I would say it was the ordinary gray iron casting."

I observed the method in which the power is transmitted to perform the machine's functions and took measurements to see the developed power of the machine. I didn't observe any safety device on it. There was nothing of that sort to be seen. Later at my plant I made calculations based on those observations and measurements which I later took up with Mr. Townsend of Technology.

"Q. 16. As a result of these computations you made and the different consultations you had with Townsend, what conclusions did you come to as to the factor of safety that was provided for in this Ohl machine?

Mr. Friedman: That I object to.

The Court: I will allow it and save your exceptions.

The Witness: From our observations and our calculations we decided that the machine was far below in factor of safety to properly do the three-eighths by twelve-foot section it was designed or guaranteed to do."

To properly form and set a piece of ⅜ths steel 12 foot long at a 90-degree angle takes 1,080 tons. I made tests [fol. 114] at my plant. The factor of safety in this machine was not sufficient to bend ⅜ths steel without danger of eruption, nor is it capable of bending even as much as ¼ inch steel. The machine operator is not expected in adjusting his machine to make provisions for the commercial variance in material after he has found his gauge with the scrap test. The machine should do its work on the material after the trial-and-error setting is made.

"Q. 17. Yes. Assuming, Mr. Perkins, that the machine had one of these two and one-quarter inch dies on it, that

it was at that moment being called upon to bend a three-sixteenths piece of steel, of either ten or twelve feet, I can't recall which now, at an angle of 90 degrees, and that it had been properly set to receive such a piece of metal, and that after the first downward stroke the machine broke in the places where you have noted, taking those facts into account, and that the break came on the second downward stroke,—taking that assumption, that hypothesis, and what you saw of the machine, are you able to tell the court what in your judgment caused that break?

Mr. Friedman: That I object to.
The Court: I will allow it and save your exception.

A. I should say that the machine had reached what we term its elastic limit, or what is set up in machines of this type, crystallization, or, as it reaches its point of what we call fatigue—after the machine, especially cast iron, after it has been under stress it causes that crystallization to set in. Then, at times, it may run for a period and then a slight excess strain may be put on it and it will let go through that fatigue which has set up——
Q. 18. Go on. Have you finished?
A. I think that sufficient."

That slight excess strain might be attributable to commercial variance in the steel.

I made my tests on soft machinery steel on different dies, one being sharp the other rounded with a 3/8ths inch radius. I used pieces of steel for the tests 3/8ths of an inch square.

"Q. 19. Now while they are being marked, Mr. Perkins, I will ask you, taking the hypothesis I have given you before, and considering the machine as you found it, and [fol. 115] taking into account all the calculations and other consideration that you have given to it, whether or not the machine in question could possibly have bent three-eighths-inch steel?
A. Absolutely——

Mr. Friedman: Wait a minute. I object.

Q. 20. Well, I haven't finished anyway, Mr. Friedman. Twelve foot six inches long on dies 2¼ breadth, the kind that you saw, and a 90-degree angle?
A. It could not.

Mr. Friedman: I object.
The Court: I will allow it and save your exception.

Q. 21. Now, assume the spread of the die was three inches and all the other hypotheses were the same, could that machine have bent three-eighths?
A. No, sir.

Mr. Friedman: I object to that.
The Court: I will save your exception.

Q. 22. Could it have bent one-quarter?
A. I hardly think so."

Subject to Ohl's exception to the question "Whether in your opinion the workmanship and the material of this machine are of the best?", the witness answered: "It was of poor material and poor construction." The court refused Ohl's motion that the answer be stricken out as irresponsive, subject to Ohl's exception.

The witness testified:

I have had experience in buying and selling machines of this nature. I have seen an Ohl press, not of the 12-foot type, except the one at the Smith plant. I have seen the lighter types, 8 to 10 foot long.

"Q. 23. Bearing that in mind, that Ohl machine of 8 or 10 feet, and add to it 2 feet, and assume in all other respects it is the same as the 10-foot machine, except that it is 12 feet, and will take a 12-foot piece, and that it was expected to bend up to 3/8ths, or 3-8ths metal, 12 foot, on square dies, the female of which measures 3 inches across, and that the machine was of the general type that is pictured in these prints that I show you marked 'Exhibit 14'—bearing that in mind, and then bearing in mind what you saw of that machine and its operations, and bearing in mind that was delivered in March of 1926, and then take into account what you saw of that machine and its limitations and infirmities in March, 1928, and bearing in mind all of the infirmities

[fol. 116] that you know about the machine, what, in your judgment, was the fair value of that machine in March of 1926?

Mr. Friedman: I object to that.
The Court: 1926.
Mr. Witte: Yes, 1926.
The Witness: As I interpret it——
Mr. Witte: Wait a moment.
The Court: I don't know. Come up here.

[Discussion at the bench.]

The Court: I will allow it and save your exception.
The Witness: Knowing that the——
Mr. Friedman: Pardon me just a moment.
The Court: You may answer.
The Witness: Knowing the deformities——
Mr. Friedman: No.
The Court: What is the fair valuation?
The Witness: What I place as fair valuation?
Mr. Witte: Yes.

A. I have got to assume those deductions.

Mr. Witte: Yes, come to the net results.
A. Net results—I should say about $2,500."

We are not a competitor of the Ohl Company because our machines similar to this type are for blanking, forming or piercing.

"Q. 24. One thing I am reminded of that in my endeavor to hurry along I had forgotten. You heard something about bowing in this case?
A. I have.
Q. 25. And I presume we can all agree that bowing is some bend in the product?
A. A bend in the base.
Q. 26. A bend in the base?
A. Yes, sir.
Q. 27. Have you from your observation and study formed any opinion as to the cause of this bowing with the product in the machine in question?

Mr. Friedman: I object.
The Court: The cause of what?

Mr. Witte: Of the product of this machine.

The Court: I will allow it and save your exceptions.

[fol. 117] Q. 28. In stringer work?

A. The base wasn't sufficiently given material enough, and from my observation I observed there was a large hole in the center of the bed which greatly weakened that cross-section. There is a hole here that comes down through the bed, which you couldn't observe on the drawings and blueprint. There is an oblong hole in the center of the base, which measurements I did not take.

Q. 29. It does not appear in these prints, Exhibit 14?

A. Which I couldn't see.

Q. 30. And is that sufficient in your judgment to cause this bowing?

A. It greatly reduced its efficiency.

Q. 31. Are there any other factors that enter into the bowing result, if any?

A. Why, no, I can see none other than the weakness of the bed."

On cross-examination the witness testified:

We make machines for punching, blanking and forming shearing. The bulk of our work now is in making light machines of 5 to 6 ton weight. Some of the machines were up to 100,000, and likely 400,000 pounds. I saw the Ohl press in question only once. I made my report from notes I then made but which I have since destroyed. Before I made my report I bent 3/8ths pieces one inch wide on a ton press, on a 2¼ inch die. I had no measuring device but from the stress used on the machine and a formula I computed the pressure required. I haven't those calculations with me. I didn't save them. I made those back in March and based my report on them. I made no test on the Ohl machine. I did not see the blueprints, plans and specifications for this machine. I don't know whether the machine corresponds to the plans and specifications in the order or not. I did not examine the dies. No complaint was made about the dies.

It takes 2,000,000 pounds pressure to properly bend and set 3/8ths inch thick soft steel material. I arrived at that by taking from the text books 60,000 pounds per inch re-

quired to shear that metal, multiplied that by 3/8ths of an inch by 12 feet or 54 square inches.

[fol. 118] X Q. 32. And that produces 1,000 tons?

A. Yes. That is, in order to hit the metal and bend it, it takes 1,000 tons.

The Court: It doesn't, unless I don't know how to figure. It would take 1620 tons as I get it.

The Witness: Well, I guess that would be nearer. I guess I am carrying too many figures in my head."

"The Witness: That is all technicalities. Now, do you wish the other formula?

X Q. 33. Yes, sir.

A. I took a piece of three-eighths thick, one inch wide, and I put it into a machine that had a four-inch stroke. This machine was back geared at ten, and I think a fraction to one. It had a pulley on it and back shaft of 18 inches, and by placing a strap over the pulley and adding weight we determined by weight through our leverages to the point of bending movement that it took 7½ tons.

X Q. 34. That is the actual experiment?

A. That is my actual experiment. That is all.

X Q. 35. I thought you said there were three?

A. I said possibly two or three.

X Q. 36. Those are two?

A. The two main ones; yes.

X Q. 37. Let's see if I get this correctly. Your actual experiment showed 7½ tons?

A. Showed 7½; yes.

X Q. 38. And the theory you got in the book was it 16 tons or——

A. Thirty tons. The full total was 1,000 tons to the sheet on the first one.

X Q. 39. A thousand tons?

A. Approximately. We will call it a thousand tons for a short figure.

X Q. 40. And how would those two compare is what I wanted to know?

A. On my last one there I didn't take into consideration the setting of the metal to bring it to the proper 90 degrees. I simply took it so as to determine as near as possible to

start the bend and not to bring it to past 90 degrees or the proper commercial set.

X Q. 41. Let's get what 7½ tons would be if you carried it out.

A. Multiply 7½ tons by 144 and that will give you the total.

[fol. 119] X Q. 42. That is a trifle, if I get it, over 1,000 tons?

A. That is it. So that is what I checked myself with so as to give an approximately—what we term an approximate figure. That is a variation in commercial material which may run that up considerably higher or may run it lower, and that is where our factor of safety in the building of a machine comes into effect."

The machine I used was not a testing machine. Townsend did not tell me he had made an experiment. I submitted my report as 1,000 tons required. He and I made no calculations together. I didn't figure it out with him. I took the formula from Kent's and the Machinery Handbook.

"X Q. 43. Now, let's see about your knowledge of the metal that was in that casting.

A. I have no knowledge of the metal because I did not make an analyzation of it.

X Q. 44. And you couldn't tell what kind of cast iron it was?

A. I knew it was a casting.

X Q. 45. And cast iron may vary from a very poor one under 14,000?

A. I said possibly 14,000.

X Q. 46. And there are some mixtures that go up to 40,000?

A. Absolutely, and some may go higher.

X Q. 47. How much higher?

A. We have castings that run up to 135,000 pounds, if you wish to know.

X Q. 48. And they are cast iron?

A. They are not cast iron. Anything that goes over approximately 20,000, at which we establish it, then it comes under a different analysis. We add either chemicals or we can add steel.

X Q. 49. Do you know here?

A. No, I have no knowledge whatever.

X Q. 50. Of course that would make a great deal of difference if this cast iron happened to be a quality that was better than 20,000?

A. It would——"

I did not calculate what factor of safety this machine had when it was new. That would be impossible as I had no method of knowing what its tensile strength was. I figured its safety factor when I saw it on the basis of 20,000 pounds tensile strength to a square inch at six to one, a proper factor of safety.

[fol. 120] "The Court: So far as the factor of safety goes the machine was all right.

The Witness: According to that way of figuring, it is."

The design of this machine shows it weakness in construction.

We manufacture machines, dealing only in those of our own manufacture; have bought and sold machines in the open market other than our own manufacture, possibly within the last five years; I couldn't say whether or not we bought or sold presses of the Ohl type. The last I bought or sold was around 5 or 6 tons in weight, some time during the last five years, a party to the selling of a machine of approximately 40,000 or 50,000 pounds weight during the last five years. I don't know of any sale of a press of the size and type of the Ohl press during 1926 or '27. We keep in the market so far as the fluctuations of materials go. I don't know what was paid for the press in question. I haven't kept in touch with the market on actually constructed finished presses and am not particularly interested in following the prices.

When I saw the press in question I saw there was no provision for what we call a safety device; that was perfectly apparent and it didn't take an expert to see that. So far as I can see from the plans and specifications of Exhibit 14 there is no provision for any safety device on this press.

I do not know what the material of this machine is, whether it is poor or good.

Skill is required in the adjustment and setting of the machine.

On redirect examination:

When I said the machine as I observed it at Smith's plant had a sufficient factor of safety I meant that it did assuming the stanchions were straight instead of being arched as they are. Because of the arch construction I calculated a factor of safety way below 6 to 1. I haven't any idea of how much lower it is. I possibly could figure it out; possibly a quarter less, bringing it to 4½ at the lowest. I would have to check myself up on that.

[The report referred to by the witness was then introduced as Exhibit NNN as follows:

[fol. 121] EXHIBIT NNN

"Perkins Machine Company

Arren, Mass., U. S. A., Mar. 1st, 1928.

The A. L. Smith Iron Works, Chelsea, Mass.

GENTLEMEN: The following is my report on your Ohl's press as shown the writer at your plant.

I understand that the press is guaranteed to bend ⅜" plate 12' long, therefore this report will be based on guarantee.

The power necessary to perform this work is 1,080 tons pressure.

The press has a 30 HP. motor which throu its gearing will develop approx. 1,116 tons pressure. This shows the machine has power enough behind it if the motor develops the full rated power.

Power behind the press	1,116 tons
Power necessary to form work	1,080 tons
	36 tons surplus

So much for the gearing, now the side frame of this press contains 138 sq. in. of cast iron, at section B-B as per drawing attached—which is the point of fracture. At the average tensile strength of cast iron of 20,000 lbs. to sq. in. Kent's Handbook this will give a total tensile strength of press 5,520 tons. The side frame is constructed in an arch style see sketch which applies the pressure which will vary

from 9″ to 18″ from the center of the cross section B-B. This fact Greatly Reduces the Strength of the Frame.

A press of this type should have a factor of safety of at least -6-, therefore the actual tensile strength shown for your press is 5,520 tons which will give a safety factor of but -5-. The safety factor is very low owing to the arch construction, we figured on a Solid, not an Arch which would bring the factor of safety much below the -5- mentioned above, very much below. You ask what our factor of safety is. We allow -10- and we further increase this with four heavy steel rods two for each frame placed in the castings while rods are hot. We use 3″ rods.

[fol. 122] The writer's opinion is. Your press when new could not stand up to do the work as guaranteed, in fact, would give an opinion that it would not do ¼″ plate continuously. The resistance of the side frames with a factor of safety -6- it would then be only 943.33 tons when it requires 1,080.5 to do ⅜″ plate. This alone shows that the machine was not properly designed to have a common factor of safety allowed in machines of this nature.

If there is anything further you would care to know, we will be pleased to have you call upon us.

Yours very truly, Perkins Machine Company. Fred Perkins. Fred Perkins, Pres't.''

enc. sketch.
Copy.

Smith then rested. Ohl as plaintiff in the first case then presented the following motion:

''The plaintiff moves that the defendant be required to elect whether it will proceed under its defense in this action or under its cross action being tried herewith.''

This motion the court denied and Ohl duly excepted.

Ohl as defendant in the second case then presented the following motion:

''The defendant moves that the plaintiff be required to elect whether it will proceed with this action or rely upon its defense in the cross action being tried herewith.''

This motion the court denied and Ohl duly excepted.

Without resting, Ohl as plaintiff in the first case then presented the following motion:

"The plaintiff moves that the court herein direct a verdict for the plaintiff."

Which motion the court denied and Ohl duly excepted.

Ohl as defendant in the second case without resting then presented the following motion:

[fol. 123] "The defendant moves that the court herein direct a verdict for the defendant."

Which motion the court denied and Ohl duly excepted.

JAY F. DAILEY, called by Ohl, testified as follows:

I am an attorney living in Elizabeth, N. J., admitted to practice in August of 1928; before then was an investigator. At Mr. Ohl's request I visited the plant of the A. L. Smith Iron Works in September, 1927. First saw a M[illegible] Ship, then Mr. Simpson and then Mr. Lerner. From Mr. Simpson I ordered a piece of soft steel pressed. He showed me the Ohl press. I talked with Mr. Lerner about prices. He said the machine did exceptionally fine work. Mr. Simpson was in charge of that job. That the machine at first gave trouble but that had been remedied and the machine was now doing exceptionally fine work, that they could turn the work out on that machine.

I saw Simpson direct the man who was operating the press at the time, giving him orders. I showed Simpson a diagram of the product I wanted and asked him if this machine could do that kind of work. He said it could but that I would have to see Lerner about prices. The machine was then working on six-foot lengths. I asked Simpson if the machine could make longer lengths. He took me to the yard and pointed out a pile of stringers which he said ran from twelve to fifteen feet long which this machine had turned out, saying we have a very competent workman and he does it in two operations; that I could see for myself that it was good work. I gave an order, made a $10 deposit and afterwards got this bill for the work.

[The bill, Exhibit 21 for identification, was then marked "Exhibit 21" and the track rail referred to in the bill was marked "Exhibit 23".]

On cross-examination the witness testified:

I still do some investigation. I acquaint myself with my principal difficulty concerning which the investigation is to be made and did so in this case. Ohl told me he was having trouble with the A. L. Smith Iron Company, that they com- [fol. 124] plained a flywheel or bearing got hot, that they had broken the machine in making tests or doing some work on it, that the machine wouldn't do the work. Ohl gave me some instructions; told me to get a piece of steel bent by this company on this machine. I got in touch with Ohl through his Newark attorneys. Ohl suggested that I have a piece of 11 gauge bent.

When I arrived at the Smith plant I gave them my name as Jay F. Dailey, didn't offer them my address or business or credit standing; told them why I wanted the piece bent, saying I wanted a sample piece of track; that I might want a number of them or might want them made in the thousands or might want just a single one. I wanted to do some experimenting with them. I didn't tell them I was an inventor. I was talking to Mr. Lerner at that time. I was then an investigator and not in the track business. I was lieing when I spoke about thousands of those tracks. I made a $10 deposit and arranged to have the piece of track picked up and the balance paid when complete. I did not tell them where I came from. I don't recall the appearance of the man who was operating the machine at the time; paid no special attention to the operation of the machine and the operator.

" X Q. 1. Can you give the court the slightest inkling of what this Mr. Simpson ordered this man who was operating the machine to do?

A. Mr. Simpson left me. I was standing at one end of the machine, over on the motor end of it, and the man who was operating it was on the other end putting some pieces of steel or metal into the machine. Mr. Simpson left me and went over and spoke to the other man and he turned the piece of steel over. I don't know what he said. He just

went over and spoke to the man. I wasn't listening, and I don't know as I heard that conversation.

X Q. 2. Now, have you given us the extent of the conversation between this Mr. Simpson and whoever the man was at the machine? Have you given us all that you can remember that passed between those two men?

A. Well, I would say yes.

X Q. 3. You would say yes?

A. It probably took him five or ten minutes.

[fol. 125] X Q. 4. And that is all that occurred?

A. Yes.

X Q. 5. And on the strength of that, Mr. Witness, you have told this court that you heard Mr. Simpson give orders to the man at the machine—is that the basis of your testimony?

The Court: All that testimony of what Simpson said may go out, Mr. Stenographer."

On redirect examination the witness testified:

"A. Mr. Ohl told me that he had sold a machine to the Smith Company and that after they had made some payments they wrote or advised him that there had been some trouble with one of the bearings becoming hot, and that thereafter some professors had tested the machine in some way and apparently it had broken. He wanted me to go up to Boston and find out, if I could, just where the breaks were on the housing. He gave me a blueprint on which I was to mark the respective positions on which the breaks had occurred, and have a piece of metal turned on this if it were possible, and he gave me a sample of the piece of metal, which was not of this type. He said in making bends of that type it probably would have to be with 11 gauge because there would be a number of bends in it, and have me find out the best I could with respect to the present operation of the work and the kind of repairs that had been made on the machine."

George W. Swett, called by Ohl, testified:

I graduated from Massachusetts Institute of Technology in 1923, am associate professor of machine design, have

there been a professor for fifteen years. Mr. Townsend is associated with me and is under me in that department, being my assistant.

That is my signature to Exhibit 20. We were then working for the Smith Iron Works and have not to my knowledge been employed by the Ohl Company. I have had nothing to do with the Ohl Company except through being summoned by them here today. My last work in connection with this machine was the signing of the Exhibit 20, report. I have not been asked by the Smith Company to make any further investigation or report in the matter nor has anything been brought to my attention that would cause me to make any change in that report.

[fol. 126] On cross-examination he testified:

In that report we assumed Professor Norton's figures as figures for bending plate and not for punching. So far as we were concerned Professor Norton's inquiry did not concern the punching capacity of the machine. I assumed from his report that Professor Norton arrived at his estimate of loads by laboratory experiments upon a 12-inch plate multiplied by 12. His report does not indicate that he applied any factor to accommodate that load to a load under actual working conditions. I haven't thought of the case for two and one-half years.

"X Q. 1. Should there in your opinion be some such?

A. I should want to give more thought to that than I have.

X Q. 2. You wouldn't want to express an opinion now?

A. I haven't thought of the case for two years and a half. I would want more time.

X Q. 3. And upon your answer to that last question I just put depends the accuracy of Professor Norton's statement, does it not? That is to say, if the figure should be modified to accommodate the result under actual operating conditions, then his figure would not be trustworthy?

A. No. If upon further investigation it would be necessary to apply a factor, I will apply that factor.

X Q. 4. And then his load wouldn't be——

A. His load would be the basis only."

I was summoned here by the Ohl Company not by the A. L. Smith Iron Works.

On redirect examination he testified:

I have not talked with the Smith Company from the date the report was signed until I appeared in court under summons.

"Q. 5. Let's take this Professor Norton's report. Mr. Gallagher started reading a paragraph, and I want to call your attention to this:

'This manufacturer of this press having stated that this machine was capable of or can bend steel plate 12 feet long and ⅜ths inch thick to a 90-degree angle it was decided to make tests to see how much force would be required to do this.'

[fol. 127] And that is bending?

A. I so assume.

Q. 6. 'With results as follows: For a three-eighths inch plate 12 feet long'—and then he reports with a sharp die 792,000 pounds, and with a blunt, 880,000 pounds. And those are figures for bending, aren't they?

A. Yes, sir.

Q. 7. And hasn't got anything to do with punching, has it?

A. Not those figures.

Q. 8. And those were the figures that were given you and that you used?

A. Approximately that. We used 800,000; that is a little more than one and a little less than the other."

Peter Alling, called by Ohl, by deposition testified as follows:

I am not now connected with the Ohl Company. I was in 1926, having charge of the shop, manufacturing press, all sheet metal machinery and dies. I had charge of the whole shop. I am familiar with the machine in question, a power press or power brake, 103,000 pounds, twelve foot, six inches long. I followed the making of that machine from the time the castings came in. I weighed the castings, inspected them and they looked all right. I inspected them by eye and tapped them with a hammer. They were

taken to the planing machines and drilling machines at which times castings are further inspected by me. I found no defects. When the machine was completed it was tried out in Mr. Smith's and Mr. Hovasse's presence. Hovasse was there three days at that time. Mr. Smith was not there at the final completion. He was here when the machine was run. I met Hovasse at Ohl's factory in Smith's presence, being told by Ohl that Hovasse was Smith's foreman or expert mechanic. Hovasse inspected the machine, listened to my instructions as to how it was constructed, how to adjust it in general and under different conditions, how this and that part went in to make the different adjustments, how to adjust the flywheel, etc. That was in Smith's presence. Smith wasn't there the full three days while Hovasse was there. I told Hovasse how the press ran, how to adjust the flywheel, how to bring the hammer down to a metal thickness before he made the bend of his [fol. 128] brake. Smith and Hovasse were then with me beside the press which was being completed but was not quite in actual operation. Smith told me Hovasse would stay and become more familiar with the machine and go over it thoroughly. After Smith left, with Hovasse I went into the mechanical details of the machine, showed him the different parts, different allowances for oiling and places to oil and lubricate, and how to make a positive adjustment of the clutch. Hovasse stayed until the machine was completed, fully assembled and in operation. We made samples on the machine in Hovasse's presence. Those samples were then tagged and placed where samples are kept. Exhibit P-1 is a sample made on this press on February 26, 1926 in Mr. Hovasse's presence. Exhibits P.-2A, P-2B and P-2C were made on this press in my and Mr. Hovasse's presence. These last pieces are 3/8ths of an inch thick made on a female die 2" across the corner. Exhibit P-3 was made on the same die as P-2A, B and C, of 3/8ths inch material, made in Hovasse's presence. Hovasse said nothing with respect to these samples except that the press done a first-class job and he believed it would bend half inch. I told him I thought so, but Ohl stood behind the machine for 3/8ths and that is all. When Hovasse left, the machine was erected at our plant. It was then disassembled, loaded and shipped out of the plant.

On cross-examination he testified:

I worked for Ohl two and a half years. We inspected the castings by eye, and tap them with a hammer to see if they were any blowholes under the surface not visible on eye inspection. I did a lot of this inspection. It is not infallible. There could be a blowhole in any casting not obvious on such inspection. A blowhole big enough to cause a machine to break in operation would have caused a break when we made those exhibits.

P-1 is a 10 gauge or an ⅛th of an inch thick. This steel varies in thickness commercially to the limit of ten thousandths of an inch between the "go and no go gauges." The thicker the metal the greater the stress on the machine.

Three-eighths inch steel has a slight variation although I [fol. 129] wouldn't say greater than the 10-gauge variation. P-3 was 5/16ths of an inch thick.

"X Q. 1. P-3 was what gauge?

A. P-3 was about five- sixteenths of an inch.

X Q. 2. It was a thinner metal than P-2A, P-2B and P-2C?

A. Yes, because I didn't have three-eighths thickness.

X Q. 3. You mean you didn't have it in twelve-foot lengths?

A. No. That is why I had to use three pieces there to make up the twelve-foot length.

X Q. 4. You had no three-eighths or twelve-foot length available here?

A. No, sir.

X Q. 5. And the machine, so far as your knowledge extends, was never operated upon a twelve-foot length three-eighths thickness in the presence of Mr. Hovasse or Mr. Smith?

A. Yes, sir, it was.

X Q. 6. Is that the piece of metal here on which it was operated?

A. Right there [indicating].

X Q. 7. I say a continuous twelve-foot length?

A. That is a twelve-foot length.

X Q. 8. By that you refer to Exhibits P-2A, P-2B and P-2C?

A. Yes.

X Q. 9. These last referred to exhibits are here before you?

A. Yes.

X Q. 10. Will you look at that and tell us if you observe any break in the length?

A. Yes; there are three individual pieces.

X Q. 11. I asked you whether you made a test of this machine upon a piece of metal, one piece, three-eighths inch in thickness and twelve feet long?

A. No."

In making Exhibits P-2A, B and C the greatest stress was exerted on the machine. P-3 was made at Hovasse's request, a twelve-foot length. [It is the sample made by Ohl on the square die for stringers made by Ohl for Smith.] Our standard machine was ten foot six inches long of capacity less than 3/8ths material. The housings on this machine had a wider opening than in the ten foot six standard machine. The stanchions on this machine were reinforced and made heavier. I don't think Smith was present at [fol. 130] any of these tests. During the tests the hammer required adjustments to accommodate the different thicknesses of metal to be bent. A maladjustment throws a greater stress on the machine. If the machine was set for 5/16ths and 3/8ths was put in it the clutch would slip. Unusual stresses would be thrown on the machine. We find these variances and thickness of metal commercially in this matter.

"X Q. 12. If the machine could not accommodate itself to the variance which you described before in thickness of metal, is that clear to you what I refer to?

A. Yes.

X Q. 13. The variances that I refer to, they are commercially found in the different gauges of metals; is that clear?

A. Yes.

X Q. 14. And by that you understand that I mean these variances that come in metal as it is used day in and day out?

A. Yes.

X Q. 15. Now, I repeat, if the machine could not, in ordinary operation, be readily adjusted to these variances,

you might have in some degree an unusual stress, might you not?

A. Yes."

On redirect examination he testified:

P-1 took five operations in bending it. [It is the sample made by Ohl on the five dies made for Smith by Ohl for stair raisers and treads.]

One operation takes one bend, another takes three bends, another two bends, another two bends. The stanchions in this particular machine on account of the greater opening in the housing were reinforced and made heavier.

Frederick J. Wepler, called by Ohl, testified by deposition:

I live in Short Hills, New Jersey; was employed by Ohl in 1925 and 1926 as secretary in charge of the office, and am not now connected with the company. I had to do with the preparation of the paper dated February 25, 1926. Mr. Hovasse came to test the stress on the brake, came up from the shop to the office, and I asked him how the press was, if he had tested it thoroughly and everything was satisfactory, and he said it was. I asked him if he would sign an acceptance, and he said sure I will sign an acceptance; and this is the paper he signed. Our stenographer drew it up on my dictation and Hovasse signed it in my presence.

[fol. 131] [The paper was then offered in evidence as Ohl's Exhibit No. 24, and is the same as Smith's Exhibit No. RR, excepting only that No. 24 was the original and No. RR a copy.]

On cross-examination he testified:

That he knew the circumstances under which Exhibit 24 was signed by Mr. Hovasse, but doesn't know what anyone else of the Ohl Company said to him before the witness talked with him.

Fred L. Davis, called by Ohl, testified as follows:

I am and for the last twenty years have been foundry manager of Lidgerwood Manufacturing Company, Newark,

N. J., manufacturing hoisting engines and general jobbing work in the foundry line. I have about two hundred and fifty men in the foundry department. I have been making castings for the type used in this Ohl machine for twenty years, giving practically all my time to foundry work. Ohl's order for these castings came to my attention about November 28, 1925, his number 818, our number 1775-T. This order called for pattern No. 1942, the right housing and left housing or stanchions. From these patterns the mold was made, dried, the cores put in, the mold closed and the casting poured from the cupola, of a mixture I had made up on December 9, 1925, of three different grades of pig iron machinery scrap and steel scrap, using 15 percent of steel scrap. Steel scrap denses the iron and increases the strength. A casting so made is referred to as semi-steel. Three test bars from each heat that is poured are made at the time the casting is poured. The bars made for these two castings were tested on the testing machine and the results recorded. These show the tensile strength of the mixture that went into the housings. These tests showed a tensile strength per square inch of 34,250, 31,500 and 34,000, an average of 33,250. These are for the left housing.

[The record was admitted as Exhibit 28 (submitted herewith).]

"Q. 1. Have you the right housing the same way?
A. Yes.

The Court: That I exclude. We are not interested in the right housing. I exclude it and save your exception. Go ahead.

Mr. Friedman. All right. Just to mark it for identification."

[fol. 132] [Foundry testing report marked "Plaintiff's Exhibit 29 for identification" submitted herewith.]

After the castings were made they were cleaned, chipped and a surface inspection made by looking them over, hammering and chipping them.

"Q. 2. What do you mean by hammered and chipped?
A. We usually use a big hammer for testing castings, which is common foundry practice.

Q. 3. Was anything, according to your records, found defective in that casting?

Mr. Witte: I pray your Honor'- judgment.
The Court: That I exclude and save your exception.
Mr. Friedman: I would like to take that up a little later with your Honor."

Soft grade cast iron is usually dark in color while hard iron has a lighter color and closer grain. Including 15 percent steel shows a lighter color and a closer grain. Fifteen percent steel mixture is harder to machine than common cast iron. The patterns we used for these right and left housings we received at least nineteen years ago.

"Mr. Friedman: I think that is all, except I would like to be able to talk to your Honor and convince you that I must have that question which you excluded.
The Court: I have excluded it and saved your exception. We will take a recess for ten minutes.

[Short recess.]

Mr. Friedman: Your Honor has saved my exception and excused me from making an offer of proof in this matter?
The Court: Yes."

On cross-examination the witness testified:

That the mixture for the left stanchion or housing was prepared under his formula, including Swede, Niagara and Royal Dutch Pig Iron, machine scrap and steel scrap, with 15 percent steel scrap for that mixture. The machinery scrap would be a conglomerate mixture of any large quantity of machinery scrap. Our test bars are uniformly 16 inches long, 1 inch square. They are poured at the same [fol. 133] time from the ladle of the metal in the cupola and from the same ladle an iron casting is poured.

"X Q. 4. Does the foundry ever guarantee the tensile strength and the endurance of its housings?

Mr. Friedman: Wait a minute. I don't see how that is material.
The Court: I exclude it.

X Q. 5. Did the foundry guarantee the tensile strength and the endurance of the housings in this case?

Mr. Friedman: I don't see how that is material.

The Court: That I will allow and save your exception.

A. No, sir, we don't guarantee nothing.

X Q. 6. * * * Isn't it true, however, that in such a conglomerate mixture there may be weaknesses that did not reveal themselves in the tests? Yes or no.

A. Give me that again.

[The question is read.]

Mr. Friedman: I object to the characterization of this, if your Honor please, as a conglomerate mixture.

The Court: I will allow it and save your exception. Answer yes or no.

The Witness: Yes."

This was a very heavy housing. If there were blow holes deep in the housing we couldn't find it on our inspection. There were none that I could find on our surface inspection as I have described it.

"X Q. 7. After the stanchion was completed did you then take a specimen of the cold completed stanchion by way of test,—I mean at random from the stanchion as completed?

A. A test bar from the casting?

X Q. 8. Yes.

A. We never do.

X Q. 9. I didn't ask whether you ever do or do not. I ask whether you did in this case?

A. No.

X Q. 10. When your job was completed it was not a machined job, was it?

A. No.

X Q. 11. It was rough at the ends and awaited the machining which would be done in the Ohl plant?

A. It was a rough casting.

[fol. 134] X Q. 12. A rough casting?

A. Yes.

X Q. 13. So that it would have been possible to take a chip large enough to make a test of the final product to make dead sure whether you could find a piece that would stand the tensile strength?

A. No; not practical.

X Q. 14. I am talking about possible?

A. No; can't be done.

X Q. 15. Can't be done?

A. Can't be done unless the test bar is put on to begin with.

X Q. 16. Does that look to you like the mixture that you put into that stanchion [indicating]?

A. Yes, it does; looks very good.

X Q. 17. I didn't ask you whether it looked very good or not.

A. Well, I was just telling what I thought of it.

X Q. 18. I want to identify it.

A. Yes, it looks like my iron.

Mr. Witte: May this be marked?

X Q. 19. Will you kindly identify these two as coming from the machine in question?

A. May I see the others back there?

X Q. 20. Yes.

A. They look the same to me.

Mr. Witte: Now, I ask that those be marked.

The Court: All right.

Mr. Witte: I would like to have these two marked as one and these two as one.

[Four test bars marked "Exhibits OOO-1, 2, 3, 4".]

X Q. 21. Now, assuming, Mr. Davis, as we shall prove, that this came from the stanchion that you built for Mr. Ohl, and the one in question, the Smith, what do you say as to whether that ought to have stood a tensile test of at least 25,000 pounds?

A. The tensile strength of this bar would all depend on where you took it out of the casting entirely. If it was taken from the outside of the casting where there was a skin on the casting it would test one thing. But if you took it out of the heart of a big or thick part of metal it would be another.

X Q. 22. Then am I to understand from what you say that the outer surface for some distance through is weaker than the inner portion?

A. The outer surface——

X Q. 23. Please answer yes or no.

A. The outer surface is stronger than the inner surface always.

[fol. 135] X Q. 24. The outer surface is stronger?
A. Absolutely."

"A. You are getting nearer to the actual metal by taking it out of the casting."

On redirect examination the witness testified:

"A. We never take a test bar out of a casting except in a case like this where they would take it out of a casting, but it is not foundry practice to take those bars out of any casting. It spoils a casting to take a test bar out of it, to begin with.

Q. 25. You said it was apt to test less when you took it out that way?

A. Cutting a piece of metal out of the heart of a heavy piece of metal, the grain of the iron is much coarser due to the cooling off and the annealing in the mould, whereby you make a test bar which is only one inch square, in sand, has a slight chilling effect to begin with, cools off very quickly, gives you a better strength than a test bar taken out of an average chunk of iron. Now, when we do government work——"

"Q. 26. Assuming that a test bar of this kind was taken out of a casting that had been in use—if you assume that a casting had been under a strain, would that affect its tensile strength?

A. I don't think so.

Q. 27. Would it affect—you don't think so. Suppose the machine had been stressed to the point of metal fatigue, would that affect the tensile strength of the metal?

A. Yes.

Mr. Witte: Wait a moment.

The Court: That I exclude.

Mr. Friedman: Your Honor will have in mind that Mr. Perkins testified that there had been a metal fatigue in the stanchion that broke.

The Court: He said that is what he thought was your reason for it. I exclude it and save your exception. Incidentally, I know nothing about the subject, but I suppose it might be the fact that part of the stanchion might be awfully tired and another part not. Certain parts of the body are more fatigued than others at times. I find it so sitting in court all day. It may be true of the stanchion."

With test bars taken from the casting itself it makes a great deal of difference as to the part from which the test [fol. 136] bar is taken. If the test bar is taken from the heavier part of the casting it is taken from a part where the metal is coarse and has less tensile strength,—between 4,000 and 6,000 pounds less strength. In all heavy castings the outside cools quicker and is stronger but from the surface to the center of the casting it cools proportionately slower and has lesser tensile strength. There is never uniformity among three test bars of the same pouring. The differences averages the same as the differences in this case.

On recross-examination the witness testified:

There is a big variation between test bars taken from the heart of the metal and those taken from the outer skin. The difference might vary from 4,000 to 6,000 pounds tensile strength per square inch.

Lionell S. Marks, called by Ohl, testified as follows:

I am professor of mechanical engineering at Harvard University, having taught there since 1894. Professor Norton is in my department. I am author of the Mechanical Engineers Handbook. I have read Exhibit 19, Professor Norton's report, Exhibit 20, the report of Professor Sweet and Mr. Townsend, Exhibit NNN, Mr. Perkins' report, and the stenographic report of Mr. Perkins' testimony.

I have studied the bending of steel and like materials and have studied machinery. Used testing machinery to determine the pressure necessary to bend materials. The figure 60,000 pounds used by Mr. Perkins in his testimony is the average figure for tensile strength of mild steel. By the method Mr. Perkins described in his testimony I cannot arrive at the pressure to bend 3/8ths inch soft steel twelve foot long. The force that he assumes required is the force required to tear it apart or compress it until it fractures, not the force required to bend it. There is no equality between the force required to tear a specimen apart and the force required to bend it, the bending force being much less. According to Mr. Perkins' theory it is as easy to bend a piece of 6/8ths steel of one half the length as it

is to bend 3/8ths material of full length. The figure of 60,000 pounds referred to by Mr. Perkins appears in my [fol. 137] text book on page 384. The same figure appears on page 386 of Kent's Handbook and is there used as the force required to rupture one square inch of mild steel either by tearing, tensile strength, or by compression, compressive strength, or shearing. It is one of the factors that determine the force required to bend steel but not the sole factor. It is not a proper process in determining the bending force required to multiply this figure by the length and thickness of the material. Tensile strength means the amount of force required to pull a thing apart with force.

With reference to the test made by Mr. Perkins of a piece of steel 3/8ths inch thick 1 inch wide on a machine with a 4-inch stroke back geared at 10 to 1 with a pulley and back shaft at 18 inch where a strap is placed from the pulley and weights added, determining through the weight, leverages and calculations a bending force of 7½ ton—that is an unusual and peculiar arrangement, not the normal method of determining the desired result. The kind of an arrangement that one would set up with such equipment as one had available.

In the usual testing machine the force applied is measured the same way as material is weighed, a platform scale balance and weights which are moved to determine the force applied up to a capacity of a million pounds obtaining a direct measurement of force applied to bend the specimen. In the Perkins method, instead of measuring the weight directly the weight was applied to a belt which went from a pulley, then through a small gear wheel to a large gear wheel, through an eccentric and its weight measurement is of a weight calculated through various leverages throughout the machine. That method would be accurate if there were no absorption of force in the machine's mechanism, if there were no frictions, if the gears fitted perfectly and if there were no loss of force in the transmission from the initial weight to the force finally exerted on the specimen. Those losses are indeterminate, depending on friction which is variable, and on certainty of adjustment with a percentage of error from 5 to 50 percent, depending on the machine used, its adjustment, lubrica- [fol. 138] tion, etc., with the calculated result necessarily

greater than the actual forces applied. There are no rules recognized in the profession giving a figure from which can be determined compression necessary to bend 3/8ths-inch soft steel twelve foot long or any other size. There are no ways, other than by actual experiment, of determining that force which are sufficiently accurate to be of any service.

It requires less force to bend material on rests 3 inches apart than on rests 2¼ inches apart, requiring less force for the longer distance.

On cross-examination, he testified:

I have not seen the press in question. I have not in mind having seen an Ohl press either idle or in operation. I have not studied this particular machine. If a piece is subject both to tension and bending the total tension would be increased as a result of the bending factor. If in each cross section of the stanchion the same amount of material were used then the strength of the arch construction would be less than the strength of a straight or tripod construction. I could estimate the amount of extra metal necessary to compensate for the arch construction only after having spent at least two days on a drafting board and in making calculations.

The castings used in these stanchions technically would be called heavy castings. The breaks in the stanchion shown in the sketch referred to in Mr. Perkins' Exhibit NNN are not at a cross section of the arched portion of the stanchion. The factor of safety in a machine of this type should be at least six. Six would be a minimum in any case. This factor is gained from experience. After building a number of presses and one finds that they fail, then they are built stronger and are given a bigger factor of safety. That is the way the factor of safety is generally determined.

On recross-examination he testified:

I give greater value to Professor Norton's tests than to Mr. Perkins' two results of 1,600 tons and the other of 1,000 tons, as Professor Norton's were made in my labo-[fol. 139] ratory on one of my testing machines and I know the details. I have spoken with him about it a few days ago.

"Q. 1. Is there any difference between bending and setting?

A. Certainly.

Q. 2. Do you know whether the particular specimens that Professor Norton made were both bent and set?

A. They were bent."

FRANK KINGSLAND, called by Ohl, testified as follows:

I am in the machine business in Newark, New Jersey, with Kingsland & Co., Inc., manufacturing, forming dies, shearing plates and doing maintenance of all kinds of sheet metal workers' machinery, erecting, installing and getting them into operation. I was employed by Ohl for twelve years as foreman, then as superintendent, leaving in May, 1925.

At Ohl's request I went with Ohl's counsel to the Smith plant and saw the machine in question. I met Lerner, Smith and the master mechanic. This was about November 2, 1927. Mr. Hannoch, Ohl's counsel, went to the office and I stayed in the factory looking at the press. I was introduced to Mr. Hovasse by Mr. Lerner as their master mechanic. Mr. Lerner told me that Mr. Hovasse would talk with me. The press was in operation. They were bending some angle irons on it. I saw them forming some 10-gauge plate on dies. Hovasse said they were not Ohl dies but dies they had made themselves. I have operated such a machine many times. That machine had then been repaired by means of straps, bolts, etc. There seemed to be no difficulty in operating the machine. They didn't seem to have any difficulty in turning out the work. Nobody spoke about any difficulty with turning out work. We left the factory and went to Mr. Witte's office, meeting Mr. Smith there. Smith said that he thought there should have been a pin safety stop on the press. I told him I was familiar with all of the makes of presses of this character and none of them had such a safety device as he spoke of; that if the clutch was adjusted too tightly I could put a piece of paper between the dies and break any one of these [fol. 140] presses. If this press is adjusted so as not to leave sufficient clearance and the power put on the press instead of being able to move it would snap or break a

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housing or break the bed. I don't know just where it would break. Something would have to break or the motor might burn out. Some particular point would have to give. This would happen by failing to leave the right amount of clearance between the dies and have the clutch adjusted so tight that it wouldn't slip.

I have had nineteen years' experience in bending metal, have bent 3/8ths-inch soft steel, have made elongation and tensile strength tests when I was with the Crucible Company of America. I have made tests to determine the pressure required to bend 3/8ths-inch soft steel on 3-inch dies. It takes less pressure to bend on a 3-inch than it does on a 2½-inch die. I have made these tests on 2½-inch dies, 1½-inch and 3-inch, all different sizes. At counsel's request yesterday I made a test on a die 3 inches across the corners on 3/8ths-inch stock 1 inch wide on an Olsen testing machine. It took 4,776 pounds to form that piece to a 90-degree angle. That equals 686,000 pounds or 343 ton for a twelve-foot length, on a 3-inch die. A smaller die would have required more pressure.

The machine in question I saw at the Smith factory looked like the Ohl standard 103,000 pound power brake or press. I am familiar with the clutch device on this machine. In forming work on this machine I release the clutch so that it will just about drag and slide. I make every bend it will make in the sheet, and if the bends are not right I tighten up the adjusting screws of the clutch a little more until I get the piece formed in the shape I want it. I then leave the clutch at that adjustment and proceed with the balance of my sheets. If the clutch were properly adjusted and the operator had not allowed sufficient clearance between his dies, nothing would happen except that the clutch would slip, the arm would stop and the operator would have to adjust the clutch to start up again. The machine would automatically stop, the flywheel would keep on coasting but it would not carry the machine with it.

[fol. 141] "Q. 1. Do you know what the cost is of a new stanchion, such as you saw on that Smith press?

Mr. Witte: I pray your Honor's judgment.

A. If you will give me a couple of minutes.

Q. 2. Wait a minute. In 1925.

The Court: What is the question? The cost of it?

Mr. Friedman: Price of it, I think I said.

Mr. Witte: I pray your Honor's judgment. We were not buying stanchions. We were buying an entire machine.

Mr. Friedman: Yes; but your Honor has in mind this question: That one stanchion broke, and I suggest the price of replacing that stanchion is an element that is properly to be considered here.

The Court: That I exclude and save your exception.

Mr. Friedman: Will your Honor hear me a minute on that?

The Court: No.

Mr. Friedman: And I take it, in accordance with your Honor's suggestion the other day, in the way you exclude evidence, you do not require any offer of proof?

The Court: No, sir.

On cross-examination the witness testified:

I saw the man operating the machine at Smith's plant for a short period: saw two or three bends made from it in my presence. The operator had the dies set before I arrived. On the particular bends he was making he had no reason to change it after he had it once set. I could find no fault with the operator's operation of the machine from what I saw. I didn't examine the setting of the clutch and don't know how tight the operator had it. It doesn't make any difference how tight the clutch is set so long as enough clearance between the dies is allowed for the metal. In bending for example ¼-inch stock to allow for variation in its thickness we open up the clutch before we start to form the stock and then keep adjusting the clutch tighter and tighter until we find it forms the stock in a 90-degree shape or the desired angle, and then we hold the clutch in. If you then put in a piece thicker than a ¼-inch, bringing the hammer down, it would go just so far then the flywheel would slip around the clutch. [fol. 142] Every press turned out of the Ohl factory while I was there was tested up to capacity of the press. If it were required to bend 3/8ths-inch soft steel on 3-inch square dies I would put in a twelve-foot piece of

stock or its equivalent. If I had a twelve-foot piece I would put it in. If not, I would put in two six-foot pieces with practically the same result, the variation being so slight that you could not figure it out.

In the test I made yesterday I bent the specimen to 90 degrees. The shape is set. The metal is not set. For commercial operations we would not have to go further and set the metal. Setting the metal would require additional pressure.

"X Q. 3. How much additional pressure?

A. I don't know.

X Q. 4. I mean in proportion?

A. You can put it up anywheres the sky would be the limit, until you squash the metal; that is all there would be to it.

X Q. 5. Oh, no. You know there is a difference between bending and setting, don't you?

A. Absolutely.

X Q. 6. You heard Professor Marks make that distinction?

A. Yes, sir; there is a big distinction.

X Q. 7. And how big a distinction is there for ordinary commercial purposes now between bending and setting?

A. I have never seen any setting in commercial work. I have seen only bending.

X Q. 8. You have only seen bending?

A. Yes.

X Q. 9. That is to say, if there is a round turn to the product that is sufficient to satisfy the commercial requirements?

A. Yes.

X Q. 10. Even though your die is sharp cornered?

A. Even though your die is sharp cornered; you must have a radius equal to the thickness of the metal.

X Q. 11. So that you don't care particularly, from your understanding of commercial setting, whether it is set absolutely sharp or not—sharp cornered or not?

A. No.

X Q. 12. But if it had to be set sharp cornered it would require additional pressure?

A. It would, absolutely.

In my test I used a round nose die. On my figures to [fol. 143] bend a foot specimen it takes twelve times as much as for an inch specimen or 57,192 pounds; multiply that by 12 you get the pressure for a twelve foot specimen.

EMIL W. KOLARSY, called by Ohl, testified:

I am in the automobile business in Newark, formerly employed by Ohl, leaving them in 1926; I was superintendent. I visited the Smith plant September 1st, 1926. I met Mr. Lerner, who took me to the shop, introduced me to Hovasse, and they showed me the press. It was not in operation. The flywheel shaft assembly was disassembled. The whole clutch assembly was practically down. I saw the 16-inch bushing and noticed it was marked up where it revolved in the drum and the inside was burred up and blue, indicating that it had run hot. I noticed that they had turned eccentrics in the bushing and drilled holes in it. They claimed that the bushing had turned and sheared off the set screws holding it in the frame. That it wasn't getting any oil; that they had drilled oil holes and were going to put in feed cups and put the bushing back. I saw the shaft and pointed out to them where it was burred and shown evidence of running hot. I told them the conditions looked as though there had been a lack of oil. They showed me the brake pulley hub that was broken. Hovasse said the Boston Engineering Company in disassembling the clutch drove the shaft the wrong way and broke the hub of the brake pulley. They showed me broken retainer rings which showed that it had chewed because it was not lubricated and rings were cut out of it and it broke. They complained about no other part of the machine to me. They said something about the pieces coming out bowed. I told them that was due to the differences in the stock, the springiness. I don't remember any complaint about the dies. That is all I remember they said to me. I had not seen this particular press in operation but had seen others at the Ohl plant and had tested them in operation. In my opinion the troubles I saw at the Smith plant were due to insufficient oil. Running hot indicates a lack of lubrication. The burring I

noticed indicated the bearing had froze on the shaft, sheared [fol. 144] off the screws and revolved in the housing, all due to improper oil or lack of lubrication.

On cross-examination the witness testified:

This 16-inch bushing does not now have the appearance it had when it left the Ohl factory or as ordinarily made. It has eccentrics turned in and additional oil holes. The blow holes in the broken hub pulley don't amount to anything in that particular pulley and would not be an adequate cause for the breaking of it.

The blow hole in the right stanchion is where the 16-inch bushing fits in. That would not affect the bushing in any way. At the Smith plant I put a level on the machine. The machine was level. I don't remember whether there was or not any clearance under the bed of the machine at that time. The springiness or bowing as a general rule comes in the center of the product. This comes through the different thicknesses of the metal and the different hardness and the spring in the machine itself in any machine of that kind, which may be in the bed or it may be in the hammer of the machine.

"Q. 1. I know, but how much deflection do you think there is?

A. Well, it all depends on what you are bending and how tight you set it down.

Q. 2. How much of a deflection should there be?

A. Nobody has ever been able to tell that yet.

Q. 3. How much deflection do you think there ought to be in order to have the machine perfect?

A. There is no such thing as a perfect machine.

Q. 4. In other words, if there is a deflection it is not a perfect machine?

A. No, sir; you can't build one perfect.

Q. 5. I am asking you, if there is a deflection, it is not a perfect machine; is that correct?

A. No. It is a commercially perfect machine, I would say."

A sixteenth of an inch deflection in a machine is allowable. There is liable to be from a sixteenth to an eighth of an inch bowing, all depending on the metal.

On redirect examination the witness testified:

I had nothing to do at Ohl's plant with this machine as it [fol. 145] was shipped when I was not employed there. As this machine was built, there was an oil hole drilled through the frame lined up with an oil hole in the bushing and a plug on top of the hole in the frame. In oiling the machine you have to take the plug out and pour in the oil and if the oil was poured in there was no place for it to go except into the bushing. The oil hole is drilled in the frame, then the bushing is put in and then the oil hole is drilled through the frame so that the holes in the bushing and frame must line up. The blow hole in the right stanchion would be immediately apparent on removal of the 16-inch bushing.

George A. Ohl, called by the Ohl Company, testified as follows:

I am president and treasurer and sole stockholder of the Ohl Company. We manufacture twenty-six different kinds of machines for stamping, rolling and cutting sheet metal products from the thinner material up to half inch thick and from three foot long to twelve foot six inches long. I went with the company in 1879, my father operating the company before then. I have worked in all branches of the business, in construction and design. We have built thirty-four or thirty-five twelve foot six inch 103,000 pound press- and possibly 2,000 of the other types and capacities. We have built presses up to 212,000 pounds twelve foot six inches long. I personally go through the factory two or three times in the afternoon to look over work in process, generally with the foreman. I observe in general how things are as I go through, spending about one and a half hours a day in the office, the rest in the shop on the mechanical end. I saw the press in question every day during its construction.

On November 5, 1915, Smith phoned me from New York. I made a memorandum of what he said.

"A. He said he wanted to buy a press. I asked him what line of business he was in and he mentioned making stair risers. I started to tell him which was the proper

press to have and he told me over the phone that he knows all about the Ohl press, and he would like to know if he could come over tomorrow, which I think was November 6, 1925, and I told him I would be in all day."

[fol. 146] Smith came the next day in the morning with Mr. Hovasse. Smith told me Hovasse was the master mechanic. I showed him a ten foot six inch press we were getting ready to ship to Japan, that was running.

"Q. 1. What took place then?

A. I asked Mr. Smith if he had used heavy material, I wanted to get something to correspond. He told me he was making stringers and the heaviest material he would ever use was one-quarter inch soft steel. I said the proper machine for you to use is 68,000 10-foot press that we are furnishing some 15 or 18 concerns, the largest in the country in your line, and some of them with the larger opening, if you want to make longer stringers. He said: 'All right.' I said: 'We can give you a 28-inch opening w-ich is standard or a 40-inch opening which is also standard, depending upon the line of business you are in."

He said: "I think we have to have a bigger press." I said: "You don't need to spend that money. The press down stairs we saw yesterday"—No, that is the same day, the second time—I said: "—is plenty big enough. That bends 5-sixteenths steel with dies 2¼ across the corner." He said he would find it out later. I gave him the address of S. R. Lemcke, a firm in New York City, doing the same work as his, to go over there and look it over, and he said he would. He said he wanted the biggest press in Boston. I said: "I have big presses in Boston, 17 of this type, not the same weight." And he telephoned from New York he had called on some firm and he told me to send the blueprints and specifications and everything else pertaining to this press, that he wanted a 12-foot 6,103,000-pound press.

He spoke to me about dies at that time. We have made dies for over fifty years. I designed the dies he had because he didn't know how to make the product. I have designed dies, plan-ed them, experimented with them, put them in the press and formed metal, have stopped at plants and told them how to put in the metal; how to leave clearance, etc.

After I got Smith's order I ordered the castings from the Lidgerwood Foundry Company, with whom we had done

[fol. 147] business for twenty years, under our order No. 818, on November 25, 1925. Subsequently we received the castings from Lidgerwood. The right and left housings were made from pattern No. 1942. The housing that broke on the Smith machine is the left housing.

I first heard from Smith by his telephone call in November, 1925. He came the next day and we had a lengthy conversation about different matters which I confirmed by letter.

"Q. 2. Now, what was it that you talked about with reference to this sort of a press?

Mr. Witte: If the court please? I assume the contract having been made—a formal written contract,—everything that precedes it, so far as the making of the contract is merged in it.

Mr. Friedman: That was my first point, your Honor, and you ruled against me and let in all this testimony of Mr. Smith. My contention was that it was a written contract, and all this didn't have any bearing, but your Honor overruled it.

The Court: All right. Go ahead. I will save your exception."

Smith and Hovasse called; I showed them a press of 88,000 pounds ready to be shipped to Japan. Told them it was used throughout the United States and Canada for stringers and stair treads; that the only exception was that Sexhauer & Lempke ordered a larger opening in the housing so they could make 30-foot stringers in one, two, three and four operations where some of the bends required that greater width. Where we make big openings we strengthen the pattern. I recommended that he go over there to see it operate. The machine that I showed him had the 25-inch friction clutch as a safety device, and no other. That was the same that was on the machine we delivered Smith. Smith asked me to send him blueprints and specifications, foundation plans and details showing dies we make to form bends. He spoke about getting prices in Boston. I told him our factory had one price and we allowed no commission. He said he would take care of the commission. Two days after the telephone conversation I sent to Smith the November 9th letter, Exhibit B. That was the only address

he gave me. With that letter I enclosed the specifications and blueprints of Exhibit 14. Somewhere between the 18th [fol. 148] and the 24th of November he called and talked with me about terms and wanted me to buy the motor for him. Then I got Exhibit B from him, the letter of November 24th. Then I got Lerner's November 25th letter, Exhibit 16-A.

I saw the stanchions or housings when they came in from the foundry, when they were weighed up and the weights checked. Then I saw our superintendent, Alling, test them with a hammer and listen for a hollow sound indicating a blow hole or shrinkage. I saw the castings as taken from the scales and put on the planer and after that in the boring mill. I saw them planed and milled and bored. The rough castings as they came in were of a light blue gray color or color of semi-steel as contrasted with cast iron which is dark or black in color. We had ordered a semi-steel casting as we had been ordering them for twenty years for our different presses. In planing a semi-steel casting you find bright gray, whereas with an ordinary casting of 18 to 20 foot tensile strength you find a more open grain. Semi-steel has a tensile strength of 34,000 to 40,000 pounds as compared with ordinary cast iron of 18 through 20.

When the Smith press was about ready I wrote him that I wanted to use his press to test out twelve or fifteen sets of dies for some Canadian people. This was about a week before Hovasse called. (Exhibit T.)

The 25-inch diameter friction clutch is a safety device, the best known in mechanics among positive clutches. When the clutch and dies are adjusted for a given thickness of metal and the die adjustment is not right for the thickness of the metal this clutch when the machine is operated will slip. It will slip on an over-load and shuts off the application of power to the press although the motor flywheel may continue in operation. On the Smith press the lower or female die rested on a high beam and not on the bed of the press. The opening between the top of the bed and the bottom of the hammer is 13 inches on the Smith press. By using a die holder or eye beam the lower die sets in the holder and raises it up toward the hammer so that the dies don't have to be so heavy and thick.

[fol. 149] We generally allow on these presses a sixteenth of an inch clearance in the center of the bed for an ad-

ditional safety factor in case the machine isn't properly adjusted.

In adjusting the machine we first put in a piece of scrap material, bring down the hammer and see if the piece of scrap is loose. If there is no loose motion in the scrap you rest the hammer, put in the material on the dies, bring down the hammer, and if the 25-inch friction clutch slips then the mechanic tightens it up a little, brings down the hammer again, and if the clutch slips again tightens it up a little bit more. That is the trial and error method and depends wholly on the operator. Smith and Hovasse came to our plant February 23d. In the November visit Smith had introduced Hovasse to me as his master mechanic. On February 23d we went down to this machine in the erection shop and I think we made some stair riser samples. I was in and about the factory four or five times that morning; saw Alling instructing Hovasse; was in four or five times in the afternoon and stood there quite a while watching Alling instruct Hovasse. I didn't see any accident or any jamming of the machine. It was in running order and I had tested out a lot of dies on it four or five days before for the United States Government and some Canadian firm. I saw these tests, possibly twelve or fifteen. Some of these dies made three or four bends in one operation. Three bends on one piece of metal at the same time on dies with a 3-inch leverage for each bend requires three times the power to make one bend at a time. If the distance between the bends in one piece were one-half inch from the first to the second and an inch from the second to the third and one-half inch to the third bend, it takes four times the strain than you would get on 3/8ths-inch metal on one bend. On Exhibit P-1 (the stair riser) three bends are made in the third operation. To make these three bends in one operation on 10-gauge soft steel requires three times the pressure to make the three bends separately on 1/8th-inch soft steel assuming the same width of the female die.

I saw our superintendent, Alling, in front of the press in question instructing Hovasse on oiling it and adjusting the [fol. 150] 25-inch friction clutch. Hovasse said he was pleased with the press and I went up and wrote out this letter for the girl to type which Hovasse later signed. I had asked him whether he had received all instructions and if he was satisfied. He said he was pleased with every-

thing. I went upstairs and gave the form for him to sign to Wepler, our office man.

After that the machine was shipped and we received the notes and the contract. Some of the notes were paid. The next thing we heard was this letter of June 25, Exhibit CC.

"Q. 3. When you received that letter could you tell what they were complaining about in your machine?

Mr. Witte: Wait a minute.

The Court: That I exclude.

Mr. Friedman: I offer to show your Honor that the letter was not such as to furnish him with any idea of what they were complaining about.

The Court: I will exclude it and save your exception.

Q. 4. Up to that time, had you ever heard from them of any complaint about any parts of your machine other than the flywheel bearings and disc in this letter of June 25?

A. No, sir."

It takes pretty near double the pressure to bend 3/8ths soft steel across a 2¼-inch die than it takes on a 3-inch die.

The press we delivered to Smith conformed with the specifications and blueprints which we submitted him and so did the dies.

"Q. 5. And were they adapted to the work for which they were designed?

Mr. Witte: I pray your Honor's judgment?

The Court: That I exclude.

Mr. Friedman: I will have an exception, your Honor?

The Court: Sure."

I saw the tests on this press on dies referred to in my letter of February 13 (Exhibit T) to Smith, doing part of the work myself. Some of the dies had five bends in them. I observed that the press was working properly. This was through a period of four to six hours a day operation on these dies in this press. There was no trouble with any of the bearings. After these tests Hovasse and Smith came [fol. 151] down and the press was operated in my presence and theirs. The first day Hovasse was there we tested the dies and made the tread and riser samples. The next day

we formed some heavier material, 3/8ths on 2-inch dies as we didn't have any 3-inch dies.

If the machine were operated with the hammer and friction clutch not properly adjusted some part of the machine would break. If you haven't left enough room between the dies for the thickness of metal being used then unless the 25-inch friction clutch is properly set so that it will slip on excess strains something will break in operation of the press.

The 25-inch clutch has wooden inserts which grab the ring on the flywheel when the power is applied through the foot treadle. When you take your foot off the treadle the clutch springs pull the clutch cheeks away from the flywheel and disengages. If the clutch is properly adjusted for the work intended to be done on the machine it will slip if a piece of metal is used thicker than the adjustment. It will not slip if lighter work is used than the adjustment intended. That is the safety device for that machine and when it slips the flywheel continues to run but the hammer stops, the power is disengaged.

Mr. Perkins' testimony referred to the gears on this machine being off pitch. If they were the machine could not run without a rumbling, sharp metallic noise and the gear teeth themselves would be marked. If the shafts were out of alignment there would be a binding, the bearings would not work properly; they would get hot from extra friction. We generally have three holes in the bed to put the hoisting chains through in handling the piece and one in the hammer. These holes strengthen instead of weaken the casting as they give a greater cooling surface, having a greater tensile strength.

The machine should be placed directly on the foundation with a 1/16-inch clearance under the bed as an additional safety factor in case the clutch is not properly adjusted and thicker material is used than the adjustment is set for. If the bed rests solid on the foundation then the bed cannot [fol. 152] spring. Both housings would lift in the air when stress is applied on the machine.

In operation of the press the flywheel runs continuously. A foot treadle engages the 25-inch clutch and transmits the power to the machine. If there is too much strain on the machine the clutch slips. When you take your foot off the

pedal the brake operates on the flywheel shaft and stops its revolving. We make the hammer adjustment by power and for fine adjustments by hand. We can regulate the press to a thousandth of an inch by hand adjustment. The blow hole in the right housing where the 16-inch bushing goes is apparent when the bushing is removed. The machine in all respects complied with the specifications and blueprints submitted, so did the dies. I have had over forty years experience in my own plant and others in bending plate up to one-half inch thick cold rolled steel twelve foot six inches long. Cold rolled steel is harder to bend than soft steel. I observed what has been referred to as bowing. The first bend made in any sheet from 1/8th to 1/2 inch thick will bow under any machine that was ever made because the steel has hard and soft spots in it and varies in thickness. Sometimes you have to straighten it by hand or put flattening dies in the machine. When the second bend is made in the same plate the second bend probably will be all right.

Photographs of Exhibit 14 show the arch construction of the housing as used on the Smith press. We had been building such stanchions with the same size opening for twenty years.

Those stanchions were made from our standard pattern for this line of work. Where the stanchion is arched or bowed more metal is used than in the area where it is straight, making it stronger. The repairs made on this stanchion were not proper. In my opinion it should have been electro-welded. The stanchion could have been electro-welded without dismantling the machine in about three days' time at about $200 cost. A new housing would cost $860 f. o. b. Newark with $60 freight to Boston.

On cross-examination George A. Ohl testified that the deflection was not the sinking of the bed of the machine, [fol. 153] such sinking being known as springing. This bowing of metal does not result from springing but from imperfection in the metal. Bowing of metal bent by the Ohl machine in question results from imperfection of the metal itself and not from deflection. In his letter of August 26, 1926 (Exhibit LL) he said: "Referring to deflection, there is no machine of this type made which will not deflect in the center and we never guaranteed there would be no de-

flection." He testified that he meant by this statement that it was possible to deflect with his machine if it was maladjusted, and did not refer to his machine operating under ordinary conditions. What he meant to say was that he did guarantee the machine against deflection in proper use but did not guarantee it if it was used in an operation which it was not intended for. The letter last referred to (Exhibit LL) was in reply to Exhibit II, a letter from Mr. Witte (then acting as counsel for the Smith Company) to Mr. Shannon, of counsel for Ohl, complaining that the machine would not bend 3/8 metal without a deflection, and further pointing out the need of man power after each operation to recover the metal from deflection. In reference to the latter letter the witness testified as follows:

"X Q. 6. And he (referring to Mr. Witte, the writer of the letter) meant to say by that that after each normal operation there had to be man power to recover the metal?

A. Not machine power, man power.

X Q. 7. That is true?

A. Yes, sir; that is the only way to get those bowings out.

X Q. 8. So your machine did bow the material, didn't it?

A. No, it didn't at my factory. The machine didn't bow it, I repeat again. It is the action of the material that brings the bow in.

X Q. 9. Deflection relates to the machines, doesn't it?

A. Yes.

X Q. 10. Your machine does deflect, doesn't it?

A. I could deflect any machine we ever made.

The Court: Mr. Witte uses deflection there apparently in what we call bowing. I don't take that as meaning anything to do with the machine but with the product.

Mr. Gallagher: That is why, your Honor, that I asked this [fol. 154] witness whether deflection properly referred to the machine, and his letter shows, Exhibit LL, that he so used it, because he said, referring to deflection, 'there is no machine of this type made which will not deflect in the center.'

The Court: What Witte said was when turning out one of these things it deflects or is deflected, meaning the product and not the machine.

Mr. Gallagher: That is true, your Honor. Mr. Witte did not use it in its proper sense, but you understood what Mr. Witte meant, didn't you?

The Witness: Just as his Honor tells you.

X Q. 11. You understood Mr. Witte meant when they bend 3/8-inch metal there had to be man power after each operation to recover.

The Court: He said so now and he always said, Mr. Gallagher, that that always happened in the first bend of any piece of steel. The second bend may be all right but the first bend is always bowed.

The Witness: Steel of this kind.

The Court: Steel of this kind.

Mr. Gallagher: That is not my point, your Honor. He said to you that that resulted from the construction of the steel.

The Court: Surely. He says so. He says the machine is all right. It is the cussedness of the nature of the steel that it won't bend straight, always bows.

Mr. Gallagher: He said in his letter, however, that it is the machine."

Mr. Ohl further testified that there was not any deflection in his machine when it was shipped; that he was present in court when Mr. Kolarsey testified as follows:

"X Q. 12. How much deflection should there be?

A. Nobody has been able to tell that yet."

And this testimony the witness recalled. The witness then testified as follows:

"X Q. 13. What do you say, how much deflection should there be?

A. It depended on what pressure you put down, and what [fol. 155] rule or stick you mark to measure, and make another mark and measure it."

He said there should not be any deflection in the machine unless an extra strain was put on it, and his machine in operation under a reasonably prudent, careful workman should show no deflection.

"X Q. 14. Do you recall this testimony of Mr. Kolarsey: 'There is a certain amount of spring in the machine, in any machine.' Is that your opinion?

A. If overstrained, yes, sir; any machine ever made——

X Q. 15. No; but in ordinary commercial operation.

A. If you put beyond its capacity, yes.

X Q. 16. Up to its capacity?

A. No deflection.

X Q. 17. No deflection at all? So that you would not say that 1/16 of an inch was an allowable deflection in a machine properly operated below its capacity?

A. It is a factor of safety only."

He recalled his testimony on direct examination that at the time of the so-called test when Hovasse was standing in front of the press receiving instructions from Alling, he saw the former bend down over the bed and measure the deflection with Alling, and the result was that 'it showed 1/16 of an inch, that Alling proved to Hovasse that there was some deflection in the machine, that he overstrained it.'

X Q. 18. That was in the Smith machine?

A. Yes, sir.

X Q. 19. Was the machine overstrained down in your plant?

A. Yes, and I can overstrain it a quarter of an inch more without breaking it.

X Q. 20. We will come to that later. Now, what type of material was being used at the time you overstrained that machine down in your shop?

A. Bending first 'the stairsteps, or the risers, that was No. 11 gauge 1/8 of an inch thick, three bends in the one operation of dies that would not aggregate an inch and 11/16 across the corner, three bends.'

X Q. 21. And that was done purposely, you say, to overstrain the machine?

A. That was done to show him how to make the three bends before he had the clutch and the hammer properly adjusted.

[fol. 156] X Q. 22. Just one question about that now to sum up. Neither the clutch nor the hammer were properly adjusted at that time, and that was done purposely to put a load on the machine to show the deflection?

A. It was done to explain to Mr. Hovasse the different things that could happen on this machine.

X Q. 23. You did not expect this machine in ordinary operation to stall, did you?

A. No.

X Q. 24. And if it did stall that would show that the clutch was not properly adjusted, wouldn't it?

A. Yes, sir.

X Q. 25. And the remedy for that would be to readjust the clutch properly, wouldn't it?

A. Properly adjust the clutch and the hammer.

X Q. 26. Well, let us see what you said about the clutch here, if anything, in your directions.

A. Yes, sir."

These directions (Exhibit X) for setting up the press were typed by the Ohl Company and sent with the Smith machine.

"X Q. 27. In the first place, you say, 'In case the workman jams the press'—you did anticipate it might jam, didn't you?

A. I have seen them jam.

X Q. 28. I asked you a moment ago if you expected the press to jam or stall.

A. No, not when properly run.

X Q. 29. Then you did expect it to stall?

A. When a mistake was made.

X Q. 30. 'Through failure to allow clearance for the material between the dies.' That is down here, isn't it [indicating]?

A. Yes, sir.

X Q. 31. 'Or through faulty adjustment of the slide or hammer.' That is here [indicating]?

A. Yes, sir.

X Q. 32. 'He'—referring to the workman—'should use the starting bar in the starting collar C'?

A. There. It is put there a purpose when they jam.

X Q. 33. 'To reverse the rotation of the eccentric shaft'; that is to make the machine back water, so to speak?

A. Back it up.

X Q. 34. 'Thus taking off the pressure.' That means down here [indicating]?

A. Yes, sir; between the dies.

X Q. 35. 'Before adjusting or raising the slide or ham-
[fol. 157] mer No. 3. When using the starting bar the operator should never put his foot on the foot treadle.'

A. Correct.

X Q. 36. Now, have you said a word about adjusting the clutch.

A. Yes; properly adjust the hammer for clearance.

X Q. 37. About the clutch, sir?

A. Yes.

X Q. 38. Have you said a word about that?

A. Properly adjust the hammer. It means also the proper setting of the clutch.

X Q. 39. I thought we agreed that the hammer adjustment and the clutch adjustment were two different things.

A. They are both different, but they pertain to bending operations, but not putting the power on.

X Q. 40. The adjustment of the hammer is for the purpose of spacing the distance between the two dies properly?

A. Yes, sir.

X Q. 41. The clutch adjustment is for the purpose of so regulating the power that it will shut off if an overload is imposed?

A. Adjust it.

X Q. 42. Is that true?

A. No, sir. Yes, it is true; that is, it shuts off if overloaded,—true.

X Q. 43. Let me see if I can explain it, because I haven't your learning about it. You have the power here, and you have the machine here [indicating]?

A. Yes, sir.

X Q. 44. Now, in order to connect the two the clutch must go in that flywheel?

A. Yes, sir.

X Q. 45. Must connect with it; must come in contact with it?

A. Must come in contact with it.

X Q. 46. Now the point is that if that clutch is adjusted properly and an overload is imposed the clutch will release?

A. Yes, sir.

X Q. 47. That is the point you make?

A. Yes, sir.

X Q. 48. The purpose of the clutch then is to relieve the machine in case of overload?

A. Yes, sir."

This witness testified that if the clutch came in contact and an overload was applied at the hammers then the power would throw that entire overload onto the machine. His clutch was the safety device. The machine would not be a proper machine if it had a claw clutch or an open clutch, or any positive clutch.

[fol. 158] "X Q. 49. And if it did not have some safety device, in this case a peculiarly adapted clutch, it would not be a proper machine?

A. Yes, just the same."

That if enough clearance was not left between the dies an overload would result unless the clutch adjustment was made so as to slip upon the imposition of the overload, thus disconnecting the power from the hammers. A jamming or stalling resulted from an overload.

"X Q. 50. Now, I ask why you did not suggest in your printed directions that the proper way to relieve a machine from jamming was to make this clutch adjustment? Is the question clear to you?

A. Not with a machine that we ship out, but we have got to tell them to see that the parts don't get loose, that they be properly oiled, and to see that the belts are tightened up and that they won't slip, or any other parts of the machine."

The witness testified that if the clutch adjustment was made in the way he had described that no harm could come to the machine.

"X Q. 51. But you did not suggest in your directions a method that would prevent harm coming to a machine, did you?

A. We did.

X Q. 52. Did you suggest the clutch adjustment method?

A. Yes, sir. We showed Mr. Hovasse just exactly how to adjust that clutch from the beginning of putting a piece in until we came down——

X Q. 53. I referred to your instructions, Exhibit X—your typewritten instructions that you sent to your customers."

The witness was then asked to point out where on the typewritten instructions, Exhibit X, any reference was made to clutch adjustment, and he pointed out paragraph 6 and read what he said was the pertinent part as follows: "In case the workman jams the press through failure of allowing sufficient clearance for the metal between the dies, or through faulty adjustment of the slide or hammer", explaining that the adjustment of the slide or hammer included the adjustment of the mechanism just as well as the hammer. He also pointed out the portion of the directions reading: "The fly wheel, friction disc, brake pulley [fol. 159] and clutch have been shipped assembled", which he said meant that when shipped the clutch was in a proper position to slip when the press was overloaded unless the one receiving the shipment changed the adjustment, because the clutch as shipped was all assembled in one unit.

In reading the directions the witness read a portion of the sixth paragraph and then skipped to the ninth paragraph and read a portion of that. What the hammer adjustment does is to determine how close the male die shall come to the bed of the female die. The clutch as shipped was properly adjusted and if it were left in that adjustment on a 2¼-inch die for ⅜-inch soft steel it would have been all right.

"X Q. 54. I am talking about the Smith machine. You never tested a single piece of stock on a 2¼-inch die?

A. We tested the die, but never put any ⅜ stock on those dies. We put the dies in the machine to see if they had alignment."

This witness further testified that Defendant's Exhibit P was a blueprint showing a female member, No. 150-A, and a male member, No. 151-A, of a 2¼-inch die.

"X Q. 55. Now, you show on that blueprint your 2¼-inch die?

A. Yes, sir.

X Q. 56. That is, No. 150-A is the female member, and No. 151-A is the male member?

A. Yes, sir.

X Q. 57. And it says: '⅜ inch soft steel on 90,000 pounds press.'

A. It doesn't say anything about 103,000, 12 feet long.

X Q. 58. No. That is, a 90,000 pound press would be ⅜ths inch steel on that die, but a more powerful press would not?

A. I did not say that.

X Q. 59. Do you mean that?

A. No, sir, I don't. I mean that blueprint—the question you asked me——

X Q. 60. As you read that blueprint, would you understand from it that you could bend ⅜-inch soft steel on that die on a 103,000 press?

A. It does not say so there, does it?

Mr. King: Or lower.

The Witness: I know what I did. I did bend ⅜ on 2 inches, not 2¼.

[fol. 160] X Q. 61. Now, Mr. Ohl, as you read that blueprint, with all your skill and experience, I want you to tell us fairly, doesn't that imply to you that you could bend ⅜-inch steel on a 103,000 pound press?

A. It does not. Our specifications do.

X Q. 62. I was coming to that in a minute. But you say the blueprint does not?

A. It does not.

X Q. 63. By the way, you shipped the 2¼-inch die to the Smith people?

A. Yes.

X Q. 64. And you never shipped a 3-inch die?

A. They never ordered one.

X Q. 65. You never shipped it?

A. If they never ordered one, we never shipped one.

X Q. 66. You knew they wanted this machine to bend ⅜ inch material, didn't you?

A. I did not. He told me or wrote me a letter saying that he never used anything more than a quarter inch.

X Q. 67. Let us have that letter. While that is being searched for, you understood then that the Smith people would never use this machine for any heavier metal than ¼ inch.

A. Only what he told me.

X Q. 68. No.

A. He could use ½-inch on it.

The Court: Answer the question. You are perfectly capable of answering the questions. He said that you

understood that Mr. Smith never intended to use that machine for more than quarter inch metal, in bending?

The Witness: Yes, sir.

The Court: Now, say yes or no.

The Witness: Yes.

The Court: The answer is yes."

With respect to blueprint 490 the witness testified that that related to a 90,000 press 10 feet long, and if the press were made longer it would have to be built a little stronger because the longer the material in the press the more spring in bending, and hence the press should be made a little stronger. Length makes a difference.

"X Q. 69. And you would not expect to get the load that [fol. 161] is imposed on a 12-foot press by a test of material one inch, would you?

A. No, sir. Wait a minute. Not too quick. The test of material is an entirely different thing than the stress on the machine."

Exhibit P 4-A is imprint of the dies shipped to the Smith Company by the Ohl Company on March 2, 1926, for use on the very press involved in the litigation.

Mr. Gallagher (reading): "With reference to the 90 degree die that we ordered in our letter yesterday, we failed to mention that we would like to have it made as narrow as possible, as it will be only expected to bend ¼-inch thick material."

"X Q. 70. That is the letter that you said that led you to believe that they only wanted to bend that thickness?

A. That is one of a lot of information that they gave me about quarter inch.

X Q. 71. You referred to a letter?

A. Yes, sir; that is the letter.

X Q. 72. It was two months practically, all but eleven days, after you got Exhibit 18, that you shipped the 2½-inch die for ⅜ material?

A. No; I didn't say ⅜ material. I haven't said it anywhere that I can see.

X Q. 73. You said ⅜, 90,000 press.

A. Yes, but he didn't have that press.

X Q. 74. You knew he didn't have it?

A. That is why I didn't say it.

X Q. 75. You knew he didn't have it,—a 90,000 pound press?

A. Yes.

X Q. 76. And then you shipped a die to him for use on a 90,000 press?

A. No, sir.

X Q. 77. Pardon me until I complete my question. Knowing that he had no such press?

A. No, sir.

X Q. 78. How long did you make this 2¼-inch die?

A. Twelve foot 2 inches.

X Q. 79. You did not make it for use on a 10-foot 6 press?

A. It was not ordered for that.

X Q. 80. I did not ask you that?

A. No, sir.

[fol. 162] X Q. 81. You made it for use on a 12-foot press, didn't you?

A. Yes, sir.

X Q. 82. And for this very press?

A. Yes, sir.

X Q. 83. I show you Exhibit 17, which is referred to as the order: 'One set machinery steel standard heavy square die, 150-A, 151-A, with tool steel inserts 12 feet 2 inches long, Ohl & Company blueprints'; and then in writing, '2¼ inches across the corners of the female die.'

A. Yes, sir.

X Q. 84. Whose writing is that?

A. It looks like the order clerk's.

X Q. 85. Your order clerk?

A. Yes, sir.

X Q. 86. And that was sent for use on the Ohl press, wasn't it?

A. Yes, sir.

X Q. 87. And that order was January 18, 1926, two days after you received this letter referring to quarter-inch materials?

A. *A.* Yes sir. It speaks for itself.

X Q. 88. Now, don't you think it funny that Smith and Hovasse wanted to see you bend ⅜ material down there when they did not want to bend any at their plant?

A. Why, no, I don't think it was funny.

X Q. 89. Now, let's see; here is a man that never intended to bend anything heavier than quarter-inch material, as you understood it?

A. That is what he told me personally and wrote in the letter.

X Q. 90. And he came down to your plant and had his chief mechanic hang around for a couple days and asked you to bend 3/8 material, didn't he?

A. Yes, sir.

X Q. 91. Didn't you think it was funny?

A. I should say not.

X Q. 92. Not at all? Well, by the way, you did not bend 3/8-inch soft solid material, did you?

A. We did much more than that.

X Q. 93. Here is Exhibit P 2-B?

A. Yes, sir.

X Q. 94. That has got a little copper plate on there, hasn't it?

A. A sixteenth of an inch, which makes the hard copper —makes the steel 5/16, making the two together 3/8 thick.

X Q. 95. You have got it now hard copper?

[fol. 163] A. That is what we might use on embossing members, and we have got to have it hard copper.

X Q. 96. Is it harder to bend this piece of 3/8 P 2-B than if the entire thickness was steel?

A. It is on the dies that I use only 2 inches across the corners, when I do, and I don't have 3-inch dies, and there is a little difference between the 16th lining of copper in there than if it was all the way through 3/8, but that little difference in the force it would take to bend that is made up by 30-odd percent more than——

X Q. 97. We will come to that difference in a moment. You saw this test?

A. I was there.

X Q. 98. Did you say anything to Hovasse about that copper plate?

A. No; he saw it.

X Q. 99. Do you think he saw it?

A. I think he did.

X Q. 100. Well, do you know that he did?

A. He did, because he had to wait until I cut that out of the strip, to get three strips to make 12 feet; he had to wait there.

X Q. 101. You saw it, didn't you?

A. I surely did.

X Q. 102. So that at the time of this so-called test down in your factory you did not use any 3-inch dies; that is true?

A. Yes, sir.

X Q. 103. And you did not use any 3/8 soft steel material?

A. No, sir.

X Q. 104. Twelve foot long?

A. No, excepting the two-piece material combined to make the 3/8.

X Q. 105. Which was not of the soft steel 3/8 because it had this copper strip?

A. Yes, copper lining.

X Q. 106. And in spite of that you dictated a letter of acceptance for Hovasse to sign, didn't you?

A. Yes.

X Q. 107. And you did not subject that press to the test mentioned in Exhibit A at all, did you?

A. Thirty percent more.

X Q. 108. A greater test?

A. A greater test.

X Q. 109. But not the same test?

A. Greater; a stronger machine than we intended to give him. Furthermore, the machine weighed 108,000 pounds, 5,000 more than 103,000.

X Q. 110. Did you explain to Hovasse the difference in [fol. 164] the load imposed upon the machine by reason of using narrower dies?

A. Why, blueprint 490 shows that.

X Q. 111. No. Did you explain it to him?

A. Yes.

X Q. 112. You did?

A. Certainly.

X Q. 113. So that you showed Hovasse where you were only using a 2-inch die, but that threw a greater load on the machine?

A. I told him that was a better test.

X Q. 114. And he took your word for that?

A. I imagine he did. I had more experience than he did."

The witness then testified again in reference to the clutch adjustment and said that any mechanic or sheet metal worker could adjust it; it was a very simple adjustment to make and its adjustment had been thoroughly explained to Hovasse by Alling.

"X Q. 115. Now, if the clutch were properly adjusted and an overload were applied in bending a piece of metal, then the clutch would disengage?

A. It would slip; it would not disengage. It would slip.

X Q. 116. It would slip, and there would be no harm done?

A. No, sir.

X Q. 117. Now, if you come down a second time on that same piece of metal—of course, the metal had not grown any thicker, had it, between strokes?

A. No, sir.

X Q. 118. So that the clutch adjustment is all right, isn't it? That is true?

A. You mean properly adjusted now, or improperly?

X Q. 119. Yes; if you had not touched it.

A. Yes, sir.

X Q. 120. If it came down the second time, the clutch adjustment would be all right?

A. Yes, sir.

X Q. 121. Because if the clutch adjustment had been wrong, you would have had the clutch slip on the first stroke?

A. Yes, wherever the most power was applied.

X Q. 122. So that if the machine broke on its second comedown, that breaking would not be due to any lack of clutch adjustment, would it?

A. No, sir.

X Q. 123. And that means that it would not be due to overloading the machine?

A. It does not mean that.

[fol. 165] X Q. 124. I am talking now about a case—

A. No, it does not mean that. That is your answer.

X Q. 125. I want to be sure you understand it. I am talking about a case where the clutch is properly adjusted. Is that clear to you?

A. Yes, sir.

X Q. 126. If you had the clutch properly adjusted, and it came down once on a piece of metal——

A. And made the bend?

X Q. 127. Left the metal right there; and brought it down again——

A. Yes.

X Q. 128. —and then the machine broke——

A. Yes.

V Q. 129. —that would not be due to overloading it, would it?

A. That would be due to the fact that you broke the machine the first stroke.

X Q. 130. I see.

A. No other way. On the second you did not break it. There is no such strain after it is formed.

X Q. 131. If it broke at the second stroke it certainly would not be due to overloading?

A. No; it had already been broken.

X Q. 132. You stated that to be your opinion.

A. My opinion. It cannot be any other way.

X Q. 133. It could not break on the second stroke?

A. Positively not, with the same adjustment of the hammer.

X Q. 134. I am saying that the hammer is left alone.

A. Have not changed the distance between the dies.

X Q. 135. Now, you have heard the professors describe the noise and the extensive crack across both these supports?

A. Yes; just like a shot.

X Q. 136. Like a shot?

A. Yes, sir.

X Q. 137. And you heard him testify how that occurred at the second stroke of the hammer?

A. I heard him say that.

X Q. 138. You don't think they could have missed that noise the first time, do you?

A. No, they could not.

X Q. 139. Then do you think they may have been mistaken about it?

A. Positively; the first time—the fracture was the first time; never the second.

X Q. 140. But it never made any noise the first time, did it?

A. Yes; that is the time it made the noise.

[fol. 166] X Q. 141. Let us see; how much time would elapse between the two intervals? Will you show with your hand how fast your hammer comes down?

A. Nineteen strokes a minute.

X Q. 142. Will you just indicate to the jury how that is?

A. [The witness indicates.] I will take my watch out if you want it accurate.

X Q. 143. No. There is a measurable period of time between the two strokes?

A. They stopped the machine when they made the second bend.

Mr. Gallagher: May that go out, your Honor?

The Court: Yes.

X Q. 144. Those two strokes were not so near together that they could have confused that report?

A. I don't think so.

X Q. 145. I do not ask you to accept this as a fact, but assuming that that machine came down the first time and there was no noise of a break, and went up and came down the second time, and then you heard the break,—assuming that is true, the break was not caused by overloading, was it?

A. It surely was, the first time.

X Q. 146. All right.

A. It was not broken the second time; I know it.

X Q. 147. You were not there?

A. I was not there. I will demonstrate it; take a new machine and break it for you.

X Q. 148. Well, assume that the break did not occur at the first time—I do not ask you to accept that as a fact—but assume that it did not break the first time, then the break came on the second down stroke?

Mr. Friedman: Hasn't he got to assume also that the adjustment remained the same?

Mr. Gallagher: Yes, I want to make all assumptions.

X Q. 149. Let me start fresh. Now, assume that the press was properly adjusted, and assume that it was not touched between the first and the second operation, and assume that the machine was properly run,—the application of motor and foot treadle, and it came down the first time

and went up without a break, and came down the second time and broke; you understand that assumption?

A. And I will assume that if they did not get a piece of [fol. 167] metal between the dies other than the piece of metal they are bending.

X Q. 150. Yes.

A. I will say that if they did not try to put in any layer under the dies, and I will assume that they did not take that babbitt metal under that and push it up, that it might have broken the second time; the strain being due to the layer of babbitt metal, requiring an extra power more than the first.

The Court: I think you should answer the question. You never answer the questions.

The Witness: Your Honor——

The Court: It will help us a great deal if you just answer the questions.

The Witness: I am trying to.

The Court: But you are not at all succeeding. I would like to hear you answer a question yes or no or you don't know.

X Q. 151. Now, assuming that the clutch was properly adjusted, and assuming that the power was properly applied, and assuming the same piece of metal between the dies at both operations in the same position, that the machine comes down once and goes up and nothing happens, comes down the second time and then breaks, that break was not due to overloading the machine, was it?

A. No.

X Q. 152. That break was due to the fact, however, that some stress was put upon the machine that it could not stand, wasn't it?

A. Yes, sir.

X Q. 153. Now, that stress or load is put upon the machine between the male die and the female die, isn't it?

A. Yes, sir.

X Q. 154. And it is put upon the machine by reason of the fact that the dies come too close together,—the metal is too thick?

A. Yes, sir; not clearance enough in the dies.

X Q. 155. And you can break that machine by cutting down the clearance the thickness of a piece of paper, can't you?

A. Without any paper even.

X Q. 156. Well, let us say tissue paper. We will split the difference.

A. I say with no paper; nothing between the dies at all even."

[fol. 168] The witness testified that having a piece of metal the thickness of tissue paper to bend, the ideal setting of the dies was to provide for the male die coming as close to the female die as the thickness of the material to be bent.

"X Q. 157. Now, if you set it about a sheet of paper nearer you would throw a load on the press that the press would not bear?

A. That would be overcome easily by a 16th of an inch in the bed. If the machine was set that way it would break. If you had no more than that paper thickness interfering with the opening——

X Q. 158. Let us take two.

A. Three, would go to 1/16.

X Q. 159. One-sixteenth?

A. Yes.

X Q. 160. So that you could have a maladjustment of the male and female dies to the extent of 3/16?

A. No, sir; 1/16.

X Q. 161. And the spring in the bed would take care of it?

A. The spring in the bed would take care of it, and the mechanism in here would break that little extra strain on the press.

X Q. 162. So that at the time that this machine broke, if you assume what I have asked you to assume, namely, that it broke the second time and not the first, at the time it broke, I say, it did not break because of any overload on the dies, did it?

A. Not at that time.

X Q. 163. Now, how would you break the machine with a piece of paper?

A. By bringing the adjustment of the hammer down so low that even with a piece of paper between the dies the

eccentrics were nowhere near the bottom of the stroke, only ¼ of the way around the revolution of this shaft; in other words, one-quarter of the adjustment would strike and start to hit the die with a piece of paper in it; you still have got to come down the 3/8 before this hammer is at the bottom of the stroke; then a piece of paper between the dies, if the proper adjustment of the clutch was not there, would break the machine in other words. You will have a quarter of an inch between the dies——

X Q. 164. You were present——

A. If you put a piece of paper in there and you tighten up that clutch so that it won't slip, you have got enough power in the gearing,—you will break the bed or you will [fol. 169] break the hammer, or you will break the housing with a piece of paper.

X Q. 165. And that is because the hammer—I mean by the hammer the upper member that forces the male die down——

A. The hammer.

X Q. 166. —is so adjusted with reference to the female die on the bed that it comes down the thickness of a piece of paper lower than the space——

A. No, sir. The thickness of a piece of paper and probably a quarter of an inch more before the revolution of the eccentric stroke gets around to put the pressure on the die; the paper thickness could not break the machine, or up to a 16th; I think there is enough give in the machine to overcome that—factor of safety.

X Q. 167. A 16th?

A. Yes, sir.

X Q. 168. Now, let's see; you were present when Mr. Alling gave his deposition, weren't you?

A. Yes, sir.

X Q. 169. And what position did he hold with you?

A. He was the foreman and superintendent of the machine shop.

X Q. 170. For some years, wasn't he?

A. Yes; I think three or four.

X Q. 171. Very familiar with your presses?

A. Yes, sir. He built probably 125 of them, or 100.

X Q. 172. Do you remember my asking him this question and his making this answer:

'Q. Well, if you adjusted the hammer for 5/16 thickness of metal and worked on a ⅜ thickness, that is, 1/16 more of metal, you would probably have trouble with the machine, wouldn't you?

A. Yes, sir; the clutch would slip; if it was adjusted improperly the clutch would slip.'

Do you remember that?

A. I don't remember that.

X Q. 173. Is that your opinion?

A. No. If the clutch was adjusted properly and you put ⅜ through where there was room for 5/16, that is improperly adjusted, and wouldn't slip, and he didn't mean it in any other way, with the years of experience he has had.

X Q. 174. I see. Very fortunately I put another question.

[fol. 170] 'Q. You might also have trouble because of the unusual stresses set up by lack of alignment in the hammer and the bar pushed——'

I will pause there a moment. That means if you had not got quite down to a full stroke, but had the power, the load imposed upon your hammer, and the bar pushed, in that relation you would have trouble?

A. No, that doesn't mean alignment.

X Q. 175. Doesn't it?

A. No, sir.

X Q. 176. Let us see what he answered to it. He said: 'Yes, that would throw on the machine unusual stresses that were not contemplated in the building of it.'

A. Yes, sir.

X Q. 177. Is that true?

A. Yes, sir; that is the alignment of the board in relation to the hammer, one end being, say, a half inch opening, and the other end ⅜, if you adjust it where the alignment is.

X Q. 178.—

'Q. If the machine could not accommodate itself to the variance which you described before the thickness of metal—is that clear to you, what I refer to?'

And he said: 'Yes.'

'Q. The variances which I refer to are the differences found in the commercial gauges of metal.'

Is that clear?

A. Every sheet is different.

X Q. 179.—

'Q. And by that you understand I mean these variances that come in metal that are used day in and day out.

A. Yes.'

Now, is that clear to you so far?

A. Yes, sir.

X Q. 180. I will repeat it then:

'Q. Now, I repeat, if the machine could not in ordinary operation be readily adjusted to these variances you might have some degree of unusual stress, might you not?

A. Yes.'

A. That is proper.

X Q. 181. That is so?

A. That is positively so.

[fol. 171] X Q. 182. So that if your machine was built so that it could accommodate itself to these variances in the thickness of metal that commercially come in metal plate, then you would have some unusual stress thrown upon it, which the machine is not able to stand, wouldn't you?

A. No, sir. The machine is built to withstand some unusual stresses.

X Q. 183. I see.

A. But there is a limit.

X Q. 184. But there is a limit?

A. Yes, sir.

X Q. 185. Now, Mr. Kolarsey at your direction inspected this machine about September 1st, did he not?

A. I believe he did.

X Q. 186. And you heard his testimony, that it was set up O. K.?

A. No. I heard that it was level only.

X Q. 187. Weren't you here during his testimony?

A. Yes, sir.

X Q. 188. Did you hear him testify in answer to this question:

'Q. And the real and only important thing that you had in mind was to see that it was level, and to see that it was all set up right?

A. Yes.
Q. And that it was O. K.?
A. Yes, sir.
Q. The entire set-up of the machine?
A. Yes, sir.'

Did you hear his testimony?
A. Yes, sir."

The witness further testified that he had furnished his counsel with notes in the cross-examination of Hovasse with respect to the foundation which Hovasse constructed for the Smith machine; that there was no claim now that the foundation constructed by Hovasse for the machine in question was improper.

"X Q. 189. Now, so far as type of foundation was described by Mr. Hovasse, namely, that he went lower down than was anticipated to get bed rock, that is good practice, isn't it?
A. That makes a better foundation.
X Q. 190. There is no complaint with respect to that?
A. No, sir; not a bit.
X Q. 191. Now, what is the complaint with respect to foundation?
A. None that I know of.
X Q. 192. That is what I say.
A. But there is a complaint, as I understand, between the centers of the holes for the bolts.
[fol. 172] X Q. 193. What is that complaint?
A. The one that you made just now, about the distance of an inch.
X Q. 194. We agreed that that didn't make any difference.

Mr. Friedman: We haven't made any complaint about it.
Mr. Gallagher: I thought you did earlier.
Mr. Friedman: I did it simply to see how accurate Mr. Hovasse was.

X Q. 195. Now, with reference to the bed of the machine, you testified that it did not make much difference whether the bed was sunk in solid or not, although you did say something to Smith about a 16th of an inch clearance.
A. Yes, sir.

X Q. 196. And, as a matter of fact, in Exhibit 14, some of the blueprints show the bed of the machine unsupported, and others show it down, don't they?

A. Yes, sir.

X Q. 197. There is no complaint on that score, is there?

A. No, sir.

X Q. 198. Now, with respect to dies, I think we have said all that we can say with respect to that. Your stand on that is that you did not anticipate that Smith would try to bend ⅜-inch stock on this 2¼-inch die?

A. I did anticipate he would. I thought he would some day get into heavier stuff.

X Q. 199. And you shipped this machine to him to use for that purpose?

A. Yes, sir; sold it to him for that purpose, to bend ⅜-inch soft steel.

X Q. 200. Then that is out of the case?

A. Yes, sir.

X Q. 201. By the way, what you meant by bend ⅜-inch soft steel, was that he could bend it and sell it commercially?

A. I mean to bend it, like two or three thousand other people.

X Q. 202. In the trade?

A. On 3-inch dies.

X Q. 203. Or 2¼-inch dies?

A. No, sir.

X Q. 204. Then you do make a point that your press was not fairly tested by trying to bend ⅜-inch material on a 2¼-inch dies?

A. I don't make that a point.

X Q. 205. Do you claim that it was not a proper operation to put your machine to, to try to bend the 3/16 material on 2¼-inch dies?

A. I claim that was proper, to bend 3/16 on 2¼-inch dies.

[fol. 173] X Q. 206. So that at the time the machine broke they were not engaged in any improper operation?

A. They surely were.

X Q. 207. So far as the material, 3/16-inch, and so far as the type of die being used were concerned?

A. And the adjustment of the hammer.

X Q. 208. I have eliminated that now.

A. All right.

X Q. 209. Now, there has been a lot of talk in here about grease. There wasn't any grease cup on the machine, was there?

A. No, sir. Yes, there was our form of grease cup.

X Q. 210. Where is the grease cup?

A. A long pipe in the flywheel that holds, with the roller bearings, two teacups of oil.

X Q. 211. Grease, I am talking about now.

A. We don't use grease, except in the roller bearing.

X Q. 212. Well, was there a grease cup on the machine?

A. Yes, sir.

X Q. 213. Where was it?

A. Running away out here, right along down in here; amongst these rollers, in the roller bearing and the rollers——

X Q. 214. You have answered the question.

A. I have not. The grease cup you asked me.

X Q. 215. I asked you where it was, and you pointed it out to me.

A. I am not sure. There is a bunch of rollers—roller bearings, and the grease runs in between here; that is what we call grease cups; different shapes of——

The Court: You say there were grease cups.

The Witness: That is what we call them in our factory. Grease cups are called oil cups, the same thing.

X Q. 216. Oh, the same thing?

A. They look like an oil cup and a grease cup.

X Q. 217. Don't you have to force grease into a machine?

A. No, sir. Some grease——"

The witness then testified, with respect to his claim made in a letter of September 14, 1926, that the trouble being experienced at that time with this machine was due to failure to oil it properly. The inside of the bearing with respect to which this complaint related had been supplied [fol. 174] with an oil groove, and provision for admitting oil to the bearing surface had been made by a boring shown in the blueprints, exhibits in the case. It did not appear, however, that the grooving in the bearing intersected the lumen of the oil tube. This the witness said was not required. The witness testified with respect to this.

"X Q. 218. Now, you see I am asking you now only a very simple question, and that is this: That if below that oil hole inside there was no groove that happened to intersect at the point of that hole there the oil would then go directly against the shaft, wouldn't it?

A. Assuming that there was no room between the inside of the bushing and the outside diameter of the shaft, then it would go directly to the shaft.

X Q. 219. Now, there was a hole a 6/1000 of an inch?

A. Yes, sir.

X Q. 220. And in order to get into these little holes that oil had to thin out so that it could pass through 6/1000 of an inch?

A. Room enough, I said, for a running fit.

X Q. 221. That is what you said. Now, how thick is that paper, should you say?

A. I don't know.

X Q. 222. And that paper is Exhibit OO. Well, tell the jury, because if you know whether oil will go through 6/1000 of an inch, you must know what that represents.

A. Yes.

X Q. 223. Tell us what that represents.

A. I don't know the thickness of that paper.

X Q. 224. About what?

A. I don't know.

X Q. 225. What is your best judgment?

A. I don't know about that. If I had a micrometer I might measure it.

X Q. 226. I am asking you now about your judgment.

A. I don't want to guess.

X Q. 227. Could you guess 6/1000 of an inch?

A. There is room enough for a running fit with a film of oil.

X Q. 228. I know that is what you said.

A. That is the best I can say. We run it six days, tested the machine, and then they run it six months before the bearing got hot.

X Q. 229. But you set the shaft in there and before you [fol. 175] set it in you greased it, didn't you?

A. No, sir. We put it in and then put the oil in the pipe.

X Q. 230. Didn't you put oil on that shaft before you put it in?

A. Just a little covering of oil."

The witness testified that what Hovasse did in connection with the oiling facilities tended to ruin the bushing and did not tend to make the oil run more freely around the shaft. It permitted the oil to pass into the side of the bushing but did not tend to lubricate the shaft as good as before; that the oil hole diameter is ½-inch with a ½-inch pipe 8 inches long which the witness calls a grease cup. Of this pipe 2 inches is in the housing and ½ inch in the bushing and with the space between the shaft and the bushing 6/1000ths of an inch and the figure 8 oil grooves in the bushing would take about a tea cup full of oil; that the bushing shows signs of having been hammered; that it positively was not hammered by the Ohl Company; that it shows lines where it was driven in; that it also shows a burning mark "when it gets hot it gets black".

The witness testified that he thought his machine had a proper safety factor in the end stanchions, that his figures agreed substantially with Professor Norton's in his report, but that when it came down to tensile strength he, the witness, didn't know anything about that.

"X Q. 231. Now, your estimate of load—and by that I mean the amount of pressure occasioned by bending—results from taking the test on a one-inch piece of metal and multiplying it by 144, the length of a 12-foot press?

A. Not mine.

X Q. 232. Do you regard that as a proper way?

A. I am not expert enough to talk about the same situation that Mr. Perkins did and these experts—these professors. I have four or five different tests—testing machines—and practical tests that I can give you information on, if you want to know about what I think and what I know.

X Q. 233. So far as I inquire about it, I do want to know, and only to that extent.

A. But what Mr. Kingsland did, that is a question.

[fol. 176] X Q. 234. You were here when he testified, weren't you?

A. Yes, sir.

X Q. 235. Let us see; we had that written out, because I thought your memory would be a little uncertain about these.

A. I have a good memory, Mr. Gallagher.

X Q. 236. About some things, but you don't seem to remember——

Mr. Friedman: Now, I object to comments of that kind.

X Q. 237. Here is what he said:

'How much does it take to bend a foot, on your figures, based on your 4,766? A. Twelve times that.'

Do you remember that testimony?

A. Yes, sir. That is, an inch, or did you say a foot?

X Q. 238. A foot. So that what he did was to bend an inch of steel and got a figure of 4,766 pounds, and then multiplied that to find any given length?

A. Yes, sir.

X Q. 239. Now, let me show you Exhibits MM here. Do you notice in the bend a certain spread sideways?

A. Yes, sir.

X Q. 240. There is a little outlet of pressure each side on that narrow piece, isn't there?

A. Yes, sir.

X Q. 241. Now, that is called lateral expansion, is it?

A. That is from the soft material that squeezes out on the narrow piece.

X Q. 242. Well, that is the name that you give to it, isn't it—lateral expansion?

A. I don't know what the professors call this stuff.

X Q. 243. You don't?

A. I don't want to.

X Q. 244. You want to know what the fact is if it affects the safety of your machine, don't you?

A. I certainly do, but not through their figures.

X Q. 245. I am trying to help you. See if we can't. When you squeeze a narrow piece of paper, like that shown on MMM, you also said that you got a little spread out to the side; is that right?

A. With that heavy pressure.

X Q. 246. Yes, with the heavy pressure. Now, of course, the longer the metal is the less spread you get; that is true, isn't it?

A. You are forgetting that that is a cross grain, and when you spread these sheets it is with the grain.

[fol. 177] X Q. 247. I am going to come to that in a moment. Let us take this for a moment now. As I present it to you, you see the little spread there, don't you? Pardon me. I thought you had seen it.

A. I see a buckle there caused by pressure.

X Q. 248. Now, that is called lateral expansion, isn't it?

A. I don't know what you call it.

X Q. 249. Now, in all your sixty years of making all these presses, aren't you familiar with the fact that a narrow piece of metal when bent has a certain give at the ends?

A. We don't make any bend like that.

X Q. 250. Aren't you experienced with that?

A. No, I won't say I am,—what you call lateral expansion.

X Q. 251. Let us get out of this field of territory now and get down to cold turkey. If you take a length of metal 12 feet long you would not get the same relief that you get in a narrow piece, like that?

A. What do you mean by the relief?

X Q. 252. This side expansion.

A. It don't show on the pieces.

X Q. 253. Therefore, it is not a fair test, is it, of what will bend a piece of metal 12 feet long, to perform a laboratory bending experiment on some machine on an inch wide material?

A. Personally, I don't know except——"

[Examined with reference to Exhibit WW.]

"X Q. 254. I think you said that that blow hole did not make any difference in the casting?

A. I did.

X Q. 255. You had another name for it. What did you call it? What was that name, do you remember?

A. Wait a minute.

Mr. King: Shrinkage strain.

The Witness: Shrinkage strain—shrinkage hole.

X Q. 256. Is that another name for blow hole?

A. That is another name; where the casting is heavy, the outside cools off first and the inside later, and the metal pulls away and it leaves a shrinkage hole.

X Q. 257. And those shrinkage holes or blow holes—let me call them blow holes.

Mr. Friedman: No, they are not.

X Q. 258. Is there a difference?

A. Yes, sir.

[fol. 178] X Q. 259. What is the difference?

A. A blow hole comes from air that will bubble through from sand and dirt sometimes will float on top, and if they don't have the gate open where they pour the molten in to let the dirt rise up, they will make another kind of a hole; and then again there is a little sand hole, and then again there is what you call a shrinkage hole.

X Q. 260. Now, those holes are voids, aren't they? They are empty spaces; nothing but air in them?

A. Yes, sir.

X Q. 261. And great caution is taken in castings to prevent those holes—those voids?

A. We expect them.

X Q. 262. You expect them?

A. Yes, sir.

X Q. 263. You don't think they do a bit of harm?

A. Not a bit. I could drill two more holes in there and it would not weaken the machine, the same as these holes here.

X Q. 264. Did you hear Mr. Alling testify about the inspection he made at your plant?

A. Yes, sir, I think he did.

X Q. 265. To find out, before he used these castings, whether there were any blow holes or not?

A. Yes, sir. They do it every day.

X Q. 266. And I said: 'The tapping was done for what purpose? A. To see if there were any blow holes under the surface.'

A. Yes, sir.

X Q. 267. I said: 'If you had such blow holes you might have a cracking when the machine was subjected to stress in operation?' He said: 'Yes, if the blow holes were big enough, and enough of them.'

A. I agree with him.

X Q. 268. 'Q. That is, a cracking would indicate to you, and big enough blow holes, there is some imperfection in the metal?' Do you agree to that?

A. Yes, I agree with him, if he means that spot where that blow hole is.

X Q. 269. The blow holes do indicate an imperfection in the metal?

A. Yes, sir.

X Q. 270. And by imperfection in the metal you mean something that affects its utility?

A. If it is big enough.

X Q. 271. We will come to the size of it later. If it is big [fol. 179] enough it is an imperfection?

A. Yes; then it will affect the utility and the strength of the casting.

X Q. 272. Would you call that a blow hole?

A. I call that 'nothing'. I passed it.

X Q. 273. And you knew it?

A. I knew it."

The witness then testified with respect to Exhibit P-2, which was a piece of metal bent at the Ohl factory on the machine in question at the time of the so-called test. Ohl testified it had not been brought to a 90-degree bend although it was bent on a 90-degree die.

"X Q. 274. What is the explanation of that?

A. No attempt was made to bring it up to 90 degrees. The attempt, the only one I made, was to see if we could bend three-eighths soft steel to a two-inch die. And after, if I am allowed, your Honor, after deflection of three-eighths to an inch, a pressure of certain tons per pound, and from three-quarters to an inch, is no different.

X Q. 275. That wouldn't be called a commercial job, would it?

A. No; we didn't attempt to put it at right angles. It would be a commercial job if we didn't want a 90-degree angle.

X Q. 276. Now, I mean for a 90-degree angle job that wouldn't be a commercial job, would it?

A. No; that is an obtuse angle.

X Q. 277. Now, when you bend metal to a 90-degree angle, the result of that operation is to take some of the spring of the metal out of it, isn't it?

A. No. Simply bending.

X Q. 278. Now, if that isn't clear, I will make it clear. There is a certain tendency of the metal to spring back into shape, isn't there?

A. Sometimes.

X Q. 279. That is true, isn't it——

The Court: You have so many kinds of metal. There are so many kinds of steel, cast iron, light gray iron, and other colors here—I don't know much about it.

X Q. 280. Well, I will define it. Soft steel, 15 to 20 points, Bernille, is that the final measurement?

A. No, sir. This is 10 to 15 commercial, called soft steel.

X Q. 281. And is that Exhibit P-2,—is that only 10 to 15 points carbon?

A. I don't know. That may be harder.

[fol. 180] X Q. 282. What is referred to as 10 to 15?

A. Commercial steel is bought and purchased in construction work and bridge work, just rough material. From 15 points to 25 points it is called machinery steel; from 25 to 35 it is called higher carbon. From 35 to 45 still higher carbon, and when you get to 90 degrees carbon it is tool steel.

X Q. 283. You noticed Professor Norton's report—'Metal, open hearth steel from 15 to 20 point carbon.' Do you note that?

A. I agree with that.

X Q. 284. And then, your expert on the stand the other day, Mr. Kingsland, he said that was a very fair carbon content for that kind of steel?

A. Yes, sir.

X Q. 285. Now, do you agree with that?

A. I agree with that.

The Court: And that was 15 to 20.

Mr. Gallagher: Fifteen to 20 point carbon; yes, your Honor.

The Court: All right.

X Q. 286. This also goes on: 'Our test showed it to have Bernille hardness, No. 137.' Do you know about that Bernille hardness?

A. No, sir; never heard the word 'Bernille' in testing, and I don't know anything about it.

X Q. 287. Now, assuming you have soft steel of 15 to 20 point carbon and you have a plate of it and, say, a four-inch wide plate of the length of Exhibit P-2—is that clear to you?

A. Yes, sir.

X Q. 288. Now when you bend it there is a tendency of the metal to resist that bending, isn't there?

A. Every bend; yes, sir.

X Q. 289. And there is a little tendency of the metal to spring back?

A. Sometimes it springs in.

X Q. 289*a*. Well, spring one way or the other?

A. Yes, sir.

X Q. 290. Now, when you make the bend finally, don't you take that springiness out of the metal at the point of the bend?

A. No, sir; the hard spot in there, it is impossible to take it out.

X Q. 291. I don't mean where you have a hard spot. I mean ordinary commercial metal.

A. There are hard spots all over those sheets. The metal might be of a certain hardness where the outside end would break the same as the sample on the table. If the metal [fol. 181] didn't break naturally there is a stress against the fibre.

X Q. 292. Now, if you took Exhibit P-3 and performed the operation you performed there, making that obtuse angle, wouldn't it require as much, if not more, power to take and bend it to a 90-degree angle on that die and set it there?

A. To set it is different. We don't set this material. We bend it only.

X Q. 293. To set it would take more?

A. Oh, yes.

X Q. 294. How much more?

A. Well, the Bliss process requires 200,000 pounds to set certain dies together and form certain products.

X Q. 295. Your machine couldn't stand the stress of the loads thrown upon it in setting?

A. Not beyond its capacity; no, sir.

X Q. 296. Well, in setting this type of material, 3-inch soft steel——

A. There would be some factor of safety beyond the 3/8 material before the machine would break.

X Q. 297. But the machine isn't able to perform that operation?

A. Yes. That is what it is built for, to perform such work.

X Q. 298. And setting?

A. Not setting.

X Q. 299. I am talking about setting. It isn't built strong enough to set 3/8-inch material, is it?

A. No, sir."

The witness further testified that Exhibit 23, which was the material bent at the request of Mr. Dailey by the Smith Company, showed that it had been peened. (Peening is hand-hammering the material.) This work was done on the exhibit in question on both ends. There was bowing in the work and peening on the middle of it.

X Q. 300. Now, you told the jury about bowing, and you told these gentlemen that every machine bows, every piece of metal bows when it is bent in any machine.

A. No; every piece of metal, metal of this character, from 3/16ths up to galvanized iron, if I am allowed to explain, your Honor—26-gauge, 22-gauge, 30-gauge, for making skylights and metal windows, I don't say they bow like this heavy material, this rough material.

The Court: Never mind the galvanized iron. We have enough iron. There are as many irons in the fire now as necessary.

[fol. 182] The Witness: Well, galvanized iron is soft steel just the same.

X Q. 301. Let's stick to this material we have described as 15 to 20 point carbon soft steel.

A. Yes, sir.

[Mr. Gallagher shows Exhibit UU to the jury.]

X Q. 302. Now, you have told the jury that when this soft steel we are dealing with here is bent in a machine there is always some bowing of the material in the middle?

A. Yes, sir.

X Q. 303. Did you notice on Exhibit 23 that the peening is on the ends?

A. Yes, sir.

X Q. 304. As well as the middle. What did that indicate to you?

A. There wasn't clearance enough in the die.

X Q. 305. There was not clearance enough in the dies?

A. To take properly an extra strain, or it might have been too much clearance in the die and left room for the variations in the material, to bow.

X Q. 306. So, if you get too much clearance you get that result and if you don't get enough you get it?

A. Yes, sir. If you have too much clearance in the dies you have allowed room enough for the hard and soft spots to begin their action and get in or get out. If you don't have enough clearance in the dies you will set the metal at the point where you didn't have the clearance so the chances are that would throw from an eighth of an inch out and bow by stretching the metal at the corner."

The witness then testified that if the dies were set closer together than the thickness of the piece of steel to be bent, if the machine operated there would be some bowing or deformity in the metal. If the dies were set appreciably closer together than the thickness of metal to be bent, there would be an impasse and a tremendous stress would be thrown on the machine, and that stress might break it. Steel dealt in commercially as 3/16 may vary in thickness. When the hammer is adjusted a stock piece of steel of the thickness to be bent is used to set the hammer, this piece being called a gauge. After the hammer has been set the gauge is thrown away.

"X Q. 307. And then you put in a commercial piece?

A. Yes, sir.

X Q. 308. Let's say this commercial piece has some of [fol. 183] these hard spots and also has this 9 or 10 percent extra thickness, because the steel differs, doesn't it?

A. Yes, sir.

X Q. 309. Then, you have a situation where when the die is coming down the female member is dead solid, isn't it?

A. Lays on the bed of the press.

X Q. 310. Yes. And then you have metal that is a little thicker than the die has been set for, don't you?

A. Yes, sir.

X Q. 311. Then you have that same additional stress thrown on the machine, don't you?

A. You have additional stress.

X Q. 312. Yes. And did I read you yesterday Mr. Alling's testimony about that, that that was a stress that the machine wasn't built to sustain?

A. No, sir.

X Q. 313. Let me read that to you. It won't take a moment to find it.
A. I don't remember that.

Mr. Gallagher:

'Q. If the machine could not accommodate itself to the variance which you described before in thickness of metal; is that clear to you, what I refer to?
A. Yes.'

The Witness: I agree with him.

Mr. Gallagher:

'Q. The variances that I refer to, they are commercially found in the different gauges of metal; is that clear?'

And he answered:

'Yes, sir.'

'Q. And by that you understand that I mean these variances that come in metal as it is used day in and day out?'

and he answers:

'Yes.'

X Q. 314. That is perfectly clear?
A. To me.
X Q. 315. Couldn't be mistaken?
A. No, sir.

Mr. Gallagher: And then it goes on:

'Q. Now, I repeat, if the machine could not in ordinary operation be readily adjusted to these variances you might have in some degree an unusual stress, might you not?'

And he answered:

'Yes.'

X Q. 316. That you agree with?
A. Yes, sir.

Mr. Gallagher: Perhaps I had better read a question or two before.

'Q. As this machine was built, it was necessary to adjust [fol. 184] the hammer to accommodate the different thicknesses of sheet metal to the bend?

A. Yes, sir.

Q. And the maladjustment of the hammer, poor adjustment of the hammer, if that is clear to you, incorrect adjustment of the hammer, do you understand what I mean?'

And he said:

'Yes.'

'Q. And such adjustments would throw greater stresses on the machine than to properly adjust it?'

And he answered:

'Yes, it would throw greater stress on the machine.'

X Q. 317. Do you agree to that?

A. I surely do.

Mr. Gallagher: And then:

'Q. If you adjusted the hammer for a 5/16 thickness of metal and worked upon a 3/8 thickness of metal you would probably have trouble with the machine, wouldn't you?'

And he answered:

'Yes, the clutch would slip.'

The Witness: Yes, I agree to that.

Mr. Gallagher: I will break in on that for a moment.

X Q. 318. That is a very marked difference in thickness, 5/16 and 3/8—3/8 is 6/16—that is a whole sixteenth of *of* an inch, isn't it?

A. Yes, sir.

X Q. 319. Of course, if you made a great big maladjustment like that, that clutch would slip and the machine might stall; that is true?

A. Yes, sir.

X Q. 320. Where you come to different variances that I have spoken of in hardness and thickness, that comes in commercial sheets; is that clear to you what I refer to?

A. Yes, sir.

X Q. 321. That is too fine for a workman to adjust with his eye?

A. No, sir.

X Q. 322. That is, a workman can notice the difference in this thickness between the gauge and the pressed working piece?

A. Yes, where this is [indicating].

X Q. 323. All right. I spoke about the thickness of an exhibit yesterday, I think it was OO; it was on your letter paper. I want just for the record to get the thickness of this piece of paper. Are you familiar with this little instrument here [indicating micrometer]?

A. I have used them.

[fol. 185] X Q. 324. That is called a micrometer, isn't it?

A. Yes, sir.

X Q. 325. Will you use it?

A. [Witness measuring with micrometer.] About ten-thousand-s of an inch.

X Q. 326. You think it is about ten?

A. That is very thin.

X Q. 327. Only ten-thousandths or so?

A. One-tenth of a thousandth.

X Q. 328. Only ten-thousandths of an inch?

A. Yes. It is very thin.

X Q. 329. Now, this little instrument can also be used for measuring metal, can't it?

A. Yes, sir.

X Q. 330. By the way, do you note a little extension at the end here?

A. Some of them have it and some not.

X Q. 331. What is that?

A. An adjustment.

X Q. 332. A little safety device, isn't it, that clicks?

A. Friction.

X Q. 333. Clicks as you get the adjustment, so that you won't press the metal?

A. Yes, sir.

X Q. 334. That makes that foolproof?

A. People not accustomed to using it, it is better than without it.

X Q. 335. You can't maladjust that, can you?

A. Not very well. That is about as perfect as Brown & Sharpe makes them.

X Q. 336. They will click like that [illustrating] as soon as you get your adjustment. Now, do you think that work-

men in adjusting your press, or in operation, if there was a little variance in the thickness of the metal of the degree of the thickness of Exhibit OO, could tell that?

A. Yes, sir.

X Q. 337. All right. Let me go to another subject for just a moment, and then I won't have to read this again. Do you remember my asking Mr. Alling this question:

'Q. And as this machine was built it was necessary to adjust the hammer to accommodate the different thickness of sheet metal to the bend?

A. Yes, sir.'

X Q. 338. Do you remember that?

A. Yes, sir.

X Q. 339. Were you present while the Alling deposition was being taken?

A. Yes, sir.

X Q. 340. And you had counsel there representing you?

A. Yes; right next to you I stood.

[fol. 186] X Q. 341. Did Alling say anything about adjusting the clutch?

A. Yes, sir. You just read it a minute ago. He said the clutch might slip.

X Q. 342. He said the clutch would slip if you had a difference of 1/16 of thickness, didn't he?

A. Yes, but it couldn't slip if it wasn't adjusted.

X Q. 343. Perhaps this is clear to you. When I was inquiring of Mr. Alling about how you adjusted this machine for Bending, did I say to him: 'As this machine was built it was necessary to adjust the hammer to accommodate the different thicknesses of sheet metal to be bent?' And he said: 'Yes.'

A. Yes.

X Q. 344. Did he ever say in the course of that deposition it was necessary to adjust the clutch to accommodate the different thicknesses?

A. I don't remember what he didn't say or did say.

The Court: Mr. Ohl, let me ask you a question. As I understand your clutch mechanism, you adjust once for all?

The Witness: Once for all for that grade or thickness of metal.

The Court: Supposing you are first bending quarter-inch and then go to some other, you have to adjust your clutch again?

The Witness: Only when it is thicker. When it is thinner you don't.

X Q. 345. That brings us to the next matter. Suppose you have to work on 3/16-inch material, like this blotter here [indicating]. You set the clutch for the 3/16-inch material, don't you?

A. Yes.

X Q. 346. What do you use, a trial piece, a gauge?

A. A piece of scrap that would measure 3/16, and then lay it in on the side of the die so it would shape and leave room.

X Q. 347. Having made that adjustment you never change your clutch for 3/16, do you?

A. No, sir.

X Q. 348. As long as you work the 3/16 you can leave your clutch right that way?

A. Yes; if you have that set with the dies, as I have just explained.

X Q. 349. Now, supposing that piece of metal that you are working on, that 3/16, has this commercial variance we have described.

A. Yes, sir.

[fol. 187] X Q. 350. And differs in thickness from the gauge—you don't touch your clutch—that clutch doesn't do anything?

A. No, sir.

X Q. 351. Any adjustment for that must come through the hammer?

A. Any adjustment of that—the clutch would slip if *if* you put anything bigger. Your question—supposing the variation was greater in the center—this clutch would slip because it wasn't set for that variation.

X Q. 352. I see. Suppose the piece, the gauge, you put in to be thinner than the piece of work, the clutch would not slip?

A. No, sir, it would not.

X Q. 353. The clutch then wouldn't act as a safety?

A. Yes, sir; just the same but it wouldn't be called upon."

[Two photographs of the power press in question were marked as "Exhibits PPP" and "QQQ."]

"X Q. 354. Now, there are three arrows in this machine, on that piece of paper, suspended and pointing to different

things. Those are not part of your machine, these arrows, are they?

A. No, sir.

Mr. Gallagher: I will, with your Honor's permission, number these arrows.

The Court: All right.

X Q. 355. Exhibit PP is a photograph taken of what—the shaft assembly?

A. The flywheel shaft assembly.

X Q. 356. And between the arrows 2 and 3 there appears a disc; what is that?

A. The friction disc.

X Q. 357. And below that appears to be two shoes.

A. Two friction brake shoes.

X Q. 358. Those are the brake shoes you spoke of?

A. Yes, sir.

X Q. 359. Now, arrow 2 points to what?

A. It points to two square-head set screws in the hub of the friction disc on the left-hand side, facing the photograph Exhibit PPP.

X Q. 360. Does arrow No. 1 point to the location of that bushing that you have referred to here?

A. No, sir.

X Q. 361. That XX——

A. No, sir.

X Q. 362. Where is XX bushing located on that machine?

[fol. 188] Mr. Friedman: On the machine or in the photograph; which do you mean?

Mr. Gallagher: I will withdraw that question.

X Q. 363. Where are XX and YY located, indicating, if you will, what portion of the machine shows in the photograph?

A. It doesn't show in the photographs. You can't show it on the photograph because it is inside of the friction pulley.

X Q. 364. That is what I say—in what part of the machine?

A. Arrow No. 1 shows the collar that moves the friction pulley in and out to obtain the power to raise and lower the hammer. The cast iron bushing and the bronze bushing, the two exhibits you mentioned here, are not shown here.

X Q. 365. On this sketch here, the blueprint Exhibit 30, the clutch is shown, but it is shown set in a fixed position?

A. What clutch?

X Q. 366. Is the clutch assembly shown on this blueprint?

A. Yes, sir; the clutch is the area over here, to the right of the blue print.

X Q. 367. Now, does that clutch move about the shaft down here, the flywheel shaft?

A. Don't you mean the friction pulley?

X Q. 368. Yes. You mean that. Call it that.

A. Forget about the clutch. This is the friction pulley. This moves back and forth; when the wooden blocks engage the cast iron ring on the flywheel they push from friction through a collar and move that back and forth. When you don't want the power, move your lever in this direction, so that the friction pulley slips back and forth on that bronze bushing. The bronze bushing is brought over the cast iron bushing which supports it. This moves back and forth, the same as I can show you on the model [indicating]; this moves back and forth, this friction pulley on the flywheel. The paper is there just the same as on this model, and when it is moved back it disconnects and when the brake lever is neutral no damage can happen. When you push in you get this power to raise the hammer. It is a friction pulley.

[Mr. Gallagher shows jury Exhibits PPP and QQQ.]

X Q. 369. The arrow marked No. 1 points down to the [fol. 189] general location of this bushing; that is true, isn't it?

A. Yes, underneath the friction pulley hub. It is inside of it in fact.

X Q. 370. So that this bearing YY moves?

A. No, sir; the pulley moves.

X Q. 371. Over this [indicating]?

A. On that bearing and revolves around it at the same time.

X Q. 372. So this bearing takes two thrusts—it takes a thrust that way [indicating] and a revolving thrust?

A. It does nothing of the kind. It doesn't take a thrust either way.

X Q. 373. All right. Perhaps there is something in the word 'thrust' that I don't get. When that bearing is up

there [indicating on Exhibit 30] and you throw your clutch in and out, is there any movement about the bearing?

A. No, sir, not on the bearing.

X Q. 374. Well, in the location of the bearing is there any movement?

A. No, sir; it can't move. It is between the housing of the flywheel and the flywheel bracket. You can't move any of its parts.

X Q. 375. What is this part that you are referring to, that moves back and forth?

A. That is the friction pulley.

X Q. 376. And moves away from this bearing [indicating]?

A. Slips across the top of it.

X Q. 377. That is why you have that bronze bearing there?

A. Just because the cast iron won't do.

X Q. 378. The bearing is for the purpose of standing the wear at a given point?

A. Yes, sir, wear.

X Q. 379. So the mere placement of that bearing there indicates there is wear at that point?

A. No, sir; there can be seizure without any wear. Cast iron and bronze will run together but cast iron and cast iron will not run together.

X Q. 380. It doesn't make any difference whether this Exhibit XX is split up into six different parts?

A. No, sir.

X Q. 381. Just as good?

A. I won't say it is just as good, but we can run it for five years. I will guarantee it.

X Q. 382. I thought you said it was just as good?

A. I said I might break that in two places, and drive it in there back again in its place between the bearing and the housing, and it can move horizontally, and the purpose for [fol. 190] which it is intended will be satisfactory."

The witness testified with reference to this exhibit that what counsel termed blow holes do not affect it for the intended purpose; that they are little sand holes, not blow holes; that blow holes do not make any difference unless they get very big; that when this plant receives castings from the foundry they are inspected by tapping with the hammer to

find out if there are any holes in the casting, and if there is a hollow sound it indicates a blow hole; that his company expects blow holes in castings, the small ones making no difference as they "take care of that in making heavy patterns to overcome these expectations."

"X Q. 383. Now, wasn't the end of this Ohl press made of special construction because of the bowing in the centers?

A. No special construction. It is a standard article that we make, a standard machine that we make for this line of work. Such construction was made for 19 years before Smith purchased his machine."

In this machine because of the width of the opening in the stanchions the stanchions were made heavier than in the standard 10 foot six press; that there is no heavier load with such stanchion than with straight stanchions supporting the machine.

The witness testified that, in testifying on direct examination about the repairs made by Hovasse as shown in Exhibit TT, that one of the boltings he referred to as faulty construction was not on the broken end of the machine.

X Q. 384. So you were criticizing a repair on the part of the side of the machine that wasn't broken, to this jury?

A. Yes, sir.

X Q. 385. We will come to that. When you testified yesterday with respect to this weak repair, you testified to a repair on the unbroken side of the machine?

A. I testified to what you showed me with your finger pointing to it.

X Q. 386. It is on the unbroken side of the machine?

A. It is on the other housing, right under the right-hand housing; yes, sir.

X Q. 387. And you did not testify with respect to the repair on the broken end of the housing, did you?

A. I did refer to it some way. I even spoke about the repairs being made on that left housing so you lost two-foot [fol. 191] room, and I spoke about the plates being on there, and I spoke about the better way I could repair that.

X Q. 388. That was 'electro-welding', was it?

A. That is one of the ways.

X Q. 389. That is your best way, wasn't it?

A. No, sir; I didn't say that.

X Q. 390. What was the best way.

A. The rods over the top of the housing, down through a 2-inch brake, to cross the top of the housing with a large nut would be a job much better than those plates bolted in here where these bolts shear off. It wouldn't take any room, cost less, and be a better job if you wanted a repair job. I also mentioned it in the job of repairing the housing."

On redirect examination the witness testified as follows:

By Mr. Friedman:

"Q. 391. Mr. Ohl, in answer to some of the questions that you were asked by Mr. Gallagher in connection with the breaking of the machine on the second stroke, after it had performed one downward movement, with the hammer,—I want to call your attention to the description of that in the report of Professor Swett and Mr. Townsend which is Exhibit 20. I will read from page 3 of that report:

"Examination of the breaks show that the material is of fair composition and apparently homogeneous. Further, the cross-sectional area at the break is sufficient to withstand the maximum operating load of the machine to a reasonable factor of safety. The conclusion which must be drawn is that an excessive load was applied. An excessive load would be easily applied if the adjustment of the position of the stroke of the plunger was such as to give to the closing of the die an amount very slightly in excess of the proper distance required for thickness of stock to be bent. This could have been readily brought about by a desire to squeeze the plate to an additional amount to try and offset the bowing condition produced in the bent plate previously described. Also, a repetition of this slight excessive closing of the die from previous [fol. 192] operation had weakened the machine in a vital spot and eventually caused the rupture."

Now, is your position any different from the position which is stated by the professors in the report?

A. No, sir.

Mr. Gallagher: I object to that as leading.

The Court: That is excluded.

Q. 392. Well, do you disagree in any way with the position and statement of the professors in that report?

Mr. Gallagher: That I object to.

The Court: That is excluded.

Mr. Friedman: Your Honor is saving my exception to all these exclusions.

The Court: All right.

Q. 393. If you assumed that the machine had been operated before the professors were there and the break occurred in such a way as to produce——

The Court: Now, Mr. Friedman, I don't think—isn't this the place where the break occurred on the second time that the hammer came down?

Mr. Friedman: Yes.

The Court: Well, Mr. Ohl said that couldn't be. Mr. Ohl has said that that couldn't be, that the machine would break on the first or not at all.

The Witness: Yes, sir.

The Court: So I don't think you are entitled to ask him anything about what the professors said. The whole thing is contrary to what he said and I exclude it. The professors said this thing broke on the second stroke of the hammer and Mr. Ohl says that is impossible, as I understand it.

Mr. Friedman: I don't think your Honor correctly stated it.

The Court: Didn't you say so, Mr. Ohl?

The Witness: The first stroke had the greatest pressure and may have started the fracture and by coming down the second time it might have finished this fracture, so the report, the noise, could have occurred on the second, if the [fol. 193] first stroke did not completely fracture. For instance, when it started to go across the housing inside and around and not quite finish it, and you came down the second time, and there is less pressure there, no argument there, then, the second might have finished it and then made the report like a shot.

Q. 394. But it didn't do the whole business?

The Court: Then you may inquire something about it.

Q. 395. Just explain what you mean by saying that coming down the second stroke in and of itself would not have

caused the machine to break. Give a full explanation of your position on that.

Mr. Gallagher: I assume I can cross-examine, your Honor, on this now.

The Court: Yes.

Q. 396. Go ahead.

A. Putting a piece of ⅜ metal between three-inch dies,—we will assume, if I can, you have not the clearance in the dies for bending the material you are putting in,—the greatest strain is at the first stroke to bend the fibres, and if you start a fracture and don't complete it, when you come down on the second time without any adjustment of the pressure of the hammer, or anything at all, and keep the same distance between the dies, and using the same material, there is still a chance on the second stroke to finish that fracture and make the noise which wouldn't be made the first time if the fracture wasn't complete. A fracture may last ten years before they break, and if I may explain——

Q. 397. Go ahead.

A. I have seen castings——

Mr. Gallagher: I object.

Q. 398. Not what you have seen.

A. Castings can have a fracture that will continue for ten years before they will finally break, but they have been started through excessive strains previously and then continue on until they finally snap.

Q. 399. Now, Mr. Ohl, when you are talking of the adjustment of your hammer by your trial of a piece of metal——

A. Yes, sir.

Q. 400. If the operator is experienced and competent does he or does he not in that adjustment make any allow- [fol. 194] ance for the commercial variances in the particular thickness of metal which he is proposing to operate on?

A. He puts a piece of scrap in so it is loose and not tight, and if after making the first bend finds that the angle is not acute enough, we have a hand wheel here that he can adjust and give it paper-thickness more if not beyond the capacity of the machine and adjustment of the

clutch. The only time an experienced operator will notice stuff too thick going in is when it keeps grunting just a little bit [illustrates with a low sound]; when they make a heavy grunt, that is a telephone to him that he shouldn't continue, and a real hard grunt—you are straining the machine.

Mr. Gallagher: When he is adjusting his machine?

The Court: I suppose it is the pig iron that grunts.

[Brief recess.]

Q. 401. Now, Mr. Ohl, this is the question I want to ask you: When your competent and experienced mechanic is making his adjustment with his trial piece of steel, getting his stroke, and his dies arranged, does he make any allowance there for the commercial variance in the kind of material that he is proposing to use?

A. Yes, sir.

Q. 402. How does he do that?

A. By taking a small scrap piece and putting it on the side of the dies and see that they are loose and that they are not tight. He sees they are put in loose and he knows then with a little variation that looseness will overcome any additional strain on the slight variation of thickness or greater variation.

Q. 403. In his test he makes that allowance?

A. That is how we set the hammer first.

Q. 404. Now, there is another thing——

The Court: Now, there is one thing, Mr. Friedman, I don't understand about this.

Mr. Friedman: All right.

The Court: And that is the adjustment of the clutch. I understood Mr. Ohl to say that you adjust the clutch differently for a quarter of an inch and a three-eighths inch—perhaps I got him wrong.

[fol. 195] The Witness: You adjust the clutch for a quarter and you never can put in anything thicker but you can put in thinner. If you adjust for three-eighths you can put in a quarter-inch. You are talking of the clutch?

The Court: Suppose you have a quarter, and you want to put in a bigger piece, three-eighths, what do you do?

Mr. Friedman: Just illustrate.

The Court: What do you do with your clutch?

The Witness: If the press is adjusted with reference to the clearance in the dies and the adjustment of the clutch for a quarter-inch and you are starting work on a 5/16 sheet, you adjust your hammer higher up. You take a piece of scrap that is five-sixteenths, and you put it in between the dies seeing that you have clearance enough, that it is in there loose, and that that don't wedge in, and then you loosen these four screws in your clutch so that they are loose, and tighten it up just enough to run the machine. You come down on the sheet and say you bend it on an eighth of an inch depression and your clutch slips, you tighten up the cams again which tighten the clutch cheeks with the wooden inserts a little more. After a while you come down and the clutch slips, you tighten up the cams in the clutch cheeks a little more.

The Court: I don't understand why you should have to change your clutch for different thicknesses.

The Witness: Otherwise you won't have the safety. If you put a 5/16 piece in there and it is set for a quarter inch safety it is going to slip and you will never bend the 5/16. You have got to get in more friction, more stress on the sheets than it requires for a quarter. If you had that strain on when you formed a quarter inch you wouldn't have a safety. You would have a five-sixteenths adjustment for the quarter inch. And if you happened to get something in there on the side of the hammer above that bending a quarter inch, a maladjustment, you are going to break some castings.

Q. 405. Then you say, or do you say, that if you adjust it for 3/8, and you wanted to bend a quarter, that the clutch [fol. 196] won't hold hard enough to do it?

A. No; it will hold too hard, but it won't hurt, because if you have the right die in clearance your clutch won't slip, when bending 3/8, because you have smaller material that won't take the pressure that the 3/8 will. If you set the clutch and the hammer to form 3/8 material, and then you have a job that comes in that you want 5/16 on, which is 1/16 less, you don't have to touch the clutch, because your machine will stand that strain at which the clutch is set, the same strain as on the 5/16, the dies having always the clearance, and the material will not take the pressure to bend 5/16 that it will on 3/8, so you have all the protec-

tion to bend heavier that is good enough and not beyond the capacity of the machine when you bend lighter pieces.

The Court: Then, if you go up the clutch will slip.

The Witness: If you put in seven-sixteenths and you set it for a three-eighths, you are beyond your capacity and the clutch will slip.

The Court: In other words, your clutch has got to be tighter to bend the heavier piece?

The Witness: Yes; more power.

The Court: I have got it through my head this time, I think. That is, in other words, whenever you want to set heavier material than the machine is adjusted for at the time, you have got to make a readjustment of the clutch?

The Witness: Yes, sir.

Q. 406. There are times when if you want to set just—you want to use just one-sixteenth different, but lighter, material, you do not necessarily have to adjust the clutch?

A. You don't have to touch the clutch.

Q. 407. But you adjust the clutch when you are going from lighter to heavier material?

A. Yes, sir.

Q. 408. Now, I think I have got that through my head a little. Now, what I want to have you explain also is your talk about adjusting or setting the hammer and using this hand-wheel. Just explain how you operate it and at what stage you operate it.

A. If you want to set within a paper thickness, we will [fol. 197] say, the die, closer together, instead of throwing the hand lever in here with the power, you simply turn this hand wheel and that will give you, as I say, an adjustment on the top of an Ingersoll watch so you won't break the glass. That is a very fine adjustment that the operator uses this for. If he finds he is not down far enough and has not got the right angle, we will say, he will come down a little further, provided he has got room in the die. When he comes down the limit with that hammer, which will be the second, third, or fourth stroke, we will say, and the next piece acts different he must come down a little more to the clearance of the die. If there is any bowing outward he don't want to come down any more and that piece has got to be taken on a straight bed and bent with a hammer by workmen before he ships it away

from the plant. That's the way it is done all through the United States.

Mr. Gallagher: Can that go out, 'That's the day it is done all through the United States'?

The Court: That may go out.

Q. 409. Now, when you want to get that hammer adjusted, first you can use the machine for the first movement up and down?

A. You can see with your eye how much clearance you have got.

Q. 410. Now, is this the place [indicating]?

A. Look through either end generally.

Q. 411. Do you use this [indicating]?

A. This is the handle we use that thrusts this friction pulley in and that raises and lowers the hammer.

Q. 412. It is attached to this machine?

A. Through this mechanism.

Q. 413. Of lowering and raising the hammer?

A. Yes, through the screws.

Q. 414. Now, after you have got this adusted so that you think you have got it pretty nearly right, then you begin adjusting it by hand, using this [indicating] hand wheel that I am now having under my finger; is that correct?

A. For the final adjustment.

Q. 415. For the final stages?

A. Yes, sir.

Q. 416. All right. Now I want to ask one other thing, [fol. 198] please. You said in answer to Mr. Gallagher when he was asking about that 16-inch bushing, something about 6/1000 of an inch clearance on the space where the oil was. Will you explain that a little more so that I can understand it?

A. That gauge we use for boring out the hole for the tool steel shaft, annealed, is larger—.0156 in decimals, which means one-sixty-fourth of an inch clearance on each side of the shaft for a film.

Q. 417. One-sixty-fourth?

A. Well, the measurement in decimals is .0156. That means 1/64th of an inch on each side, which is what we leave for a film of oil to be around the shaft, the revolving shaft.

The Court: On which side? The thing is cylindrical, isn't it?

The Witness: Well, I say each side of the diameter.

Q. 418. That is, it is the difference—it is twice .0156 difference between the diameters of the two?

A. Yes, because you have to have a film of oil on both sides of the shaft, both diameters; it wouldn't do to have it only on one side.

Mr. Friedman: Yes, but you put it as if that weren't round.

Recross-examination.

By Mr. Gallagher:

X Q. 419. Now, let's see if I have got your present position right on the breaking. It is your opinion that there was, before it actually broke, some overload put on the machine that brought that portion of the frame that broke pretty near the point of fracture?

A. Yes, sir.

X Q. 420. And that overload was probably put on when the machine was put under the greatest load, wasn't it?

A. Yes, sir.

X Q. 421. Now, it may have been put on down in Newark?

A. It might have been.

X Q. 422. That's where the machine was used to bend 3/8 on a 2-inch die?

A. Yes, sir.

X Q. 423. And that's where a load was put in the machine 50 percent more than it was supposed to have?

A. No, I won't say that.

X Q. 424. Perhaps, I am wrong about the figure. Was it 30 percent--one-third, was it? I have it right here. It [fol. 199] took 50 percent more to bend on a 2-inch die than a 3-inch die; didn't you say that?

A. On the same material or the same machine?

X Q. 425. Yes.

A. Yes; that's my idea of it.

X Q. 426. So a greater load was put on that machine right down in Newark in your plant when a 2-inch die was used to bend 3/8 material?

A. Yes, sir.

X Q. 427. And that load was about 50 percent more?

A. Yes, sir.

X Q. 428. Than the normal load?

A. That's my idea, 50 percent more.

X Q. 429. And when that load was put on the machine, the clutch was adjusted for a 3/8-inch thick bend, wasn't it?

A. Yes, sir.

X Q. 430. And the clutch was shipped assembled?

A. Yes, sir.

X Q. 431. So that there was no need before the operation of the machine to set the clutch?

A. No, not at anything less than 3/8.

Mr. Friedman: I didn't get that.

[The question and answer are repeated.]

X Q. 432. Only for 3/8?

A. Yes, sir.

X Q. 433. If the clutch had not been touched and that adjustment had not been changed?

A. Yes, sir.

X Q. 434. And it broke as it did in the fall?

A. Yes, sir.

X Q. 435. Then that break was not due to any failure to adjust the clutch?

A. Not in adjusting the clutch; no, sir.

X Q. 436. Now, you testified yesterday that the clearance, the difference in diameter between Exhibit UU and the shaft that went into it was 6/1000 of an inch, didn't you?

A. For a film of oil. I testified for a film of oil.

X Q. 437. Now, that would be a difference on each side of half of that, 3/1000 of an inch, wouldn't it?

A. No; it would be a film of oil on each side.

The Court: Twice that, I should think.

The Witness: One sixty-fourth on each side is 1/32 of the diameter of the——

Mr. Gallagher: I think I am right this time, your Honor.

[fol. 200] X Q. 438. The diameter, you said. That means from outside there [indicating] to outside here [indicating]?

A. Yes, sir.

X Q. 439. And the difference in the two diameters was 6/1000 of an inch?

A. No, sir; I said that was what we need for a film of oil.

X Q. 440. I thought you testified yesterday, and I think I have taken it down verbatim, that the difference in the diameter between that bearing and the shaft—the diameter was fitted to a block of collars and that collar is 6/1000 of an inch less than the diameter of the bearing.

A. Less on each side. You have got to have that room for oil.

X Q. 441. Is that what you said?

A. That's what I meant, if I didn't say it. That's what I meant.

X Q. 442. You said 'diameter'.

A. Well, I said on each side, too. I should have said each side.

X Q. 443. You should have said side?

A. Yes.

X Q. 444. Now, 6/1000 of an inch is the way you leave it now as the clearance between the inside of this bearing and the shaft (Exhibit UU)?

A. On both sides.

X Q. 445. All around?

A. Yes, sir.

X Q. 446. And that's the only oiling clearance?

A. Yes, sir.

X Q. 447. If it was 3/1000 of an inch, that wouldn't be enough?

A. That would be more.

X Q. 448. 3/1000 of an inch?

A. Yes.

X Q. 449. Is more than 6/1000 of an inch?

A. Well, wait a minute; 31——

The Court: You are wrong there.

The Witness: This you mean—about 3/1000.

X Q. 450. Now, a 64th of an inch is almost 16/1000, isn't it?

A. Whatever the decimals are—we don't use the decimals so much. We use a 64th.

X Q. 451. That's what you needed to permit oil to go around it.

A. It could have been less.

X Q. 452. I see it. I am told by Mr. White that on the United States army specifications there was some underlining on it that was made objectionable.

[fol. 201] The Court: All right.

Mr. Gallagher: I have taken that out now.

Mr. Friedman: I object.

The Court: I will allow it and save your exception.

[United States Army, Ordnance Department, Metal specifications, January, 1924, marked "Defendant's Exhibit RRR".]

Mr. Gallagher: There is just one more question with respect to that which I want to ask and I am done. Exhibit RRR is the United States Army Ordnance Department metal specifications, June, 1924, high test gray iron casting—I won't bother to read it to you gentlemen now. I just want to ask a question or two. On page 2 there is a little calculation here of three kinds of castings. First, a light casting, then a medium casting, and heavy casting.

X Q. 453. Do you know that, Mr. Ohl?

A. Yes, sir.

X Q. 454. Now, on page 1 there are three classifications, and then, in the other column, 'Identification'; do you note that light castings—'those having no section less than one-half inch thickness'—this wasn't a light casting?

A. Heavy.

X Q. 455. Heavy casting. 'Those having no section less than two inches in thickness'—that's the kind this was?

A. Two and one-half inch, or regular.

Mr. Friedman: Your Honor appreciates this is the Navy or Army definition of the term.

Mr. Gallagher: They are used throughout the country.

X Q. 456. And for heavy castings, the tensile strength, minimum, is 30,000 pounds a square inch, isn't it?

A. Yes.

X Q. 457. Now, just one or two more questions. When you had this machine, this casting, delivered to you the hole through which the shaft that I now indicate, the flywheel shaft, was to rest in had not been machined out?

A. Which, the hole in the housing?

X Q. 458. Yes.

A. No, sir, not when it came in. It came right in from the foundry.

X Q. 459. You machined it out?

A. Our boring mill did.

X Q. 460. Did you have a test made on the strength of the casting then; did you?

A. No.

[fol. 202] Mr. Gallagher: That's all.

Redirect examination.

By Mr. Friedman:

Q. 461. Mr. Ohl, this Exhibit RRR is the general specifications. 'General specifications' for metal products No. 5020 issued by the Ordnance Department, in effect as of the date of opening the bid, which form part of the specifications—have you ever seen any of those pamphlets?

A. No.

Q. 462. Have you ever bid for Government work?

A. Yes, sir.

Q. 463. Sold some of your presses to the Government?

A. Every United States Navy Yard has got one of these presses. There are three of them in the Charlestown Navy Yard, passed at the factory by their inspectors.

Mr. Gallagher: That I ask to go out. That's good sales talk.

The Court: That may go out.

Q. 464. Did you in talking with Mr. Smith——

The Court: That is excluded. If the definitions there are different in the trade you may bring it out. If not, you may not.

Q. 465. I am showing you a pamphlet that I have had marked for identification with Mr. Brown's signature, which Professor Marks identified as issued by the American Society for Testing Materials. Do you recognize that?

A. I don't know anything about that.

Q. 465a. You don't know whether——

Mr. Gallagher: He said he didn't know.

The Witness: I have practical experience.

The Court: Never mind that. If he knows that these requirements are different from what the trade usually knows,—you needn't show him any more society pamphlets. If they are different, and he knows it, bring it out.

Mr. Friedman: I think I will offer ours and let it go at that. Professor Marks identified it and talked about it.

The Court: All right, you may.

[Discussion at the bench.]

Mr. Friedman: I offer this.

[Pamphlet of the American Society for Testing Materials marked 'Plaintiff's Exhibit 32'.]

[fol. 203] Q. 466. Mr. Ohl, you have no means of knowing what pressure or what strength that Ohl machine was put to after it got to the Smith factory, have you?

A. No.

Q. 467. And of course it would make a great deal of difference whether the biggest pressure was put on in your place or in the Smith place, and if the clutch was properly or improperly adjusted in the Smith plant, would it not?

A. It would.

Mr. Gallagher: I don't understand that question. All right. He has answered it.

Q. 468. That is, the wrong adjustment of the clutch in the Smith plant might subject your machine to unusual and unnecessary strain?

A. Yes, sir.

Q. 469. Or the wrong adjustment of clearance in the dies in the machine?

A. Yes, sir. A big difference.

Q. 470. Would that subject it to an unusual and unnecessary stress?

A. Yes.

Mr. Friedman: I think that's all. I think we rest, your Honor.

The Court: What?

Mr. Friedman: We rest.

The Court: All right."

Harold C. Mann, called by Smith in rebuttal, testified:

I am research engineer for the Watertown Arsenal of the United States Government, not acquainted with Smith or Ohl. I made tests of certain materials for Smith on the Riele tensile testing machine of Exhibits OOO-1, -2, -3 and -4.

"Q. 1. What did that test reveal?

Mr. Friedman: I object.

The Court: Is it in evidence where those things came from?

Mr. Gallagher: I thought it was. Perhaps I may be in error.

Mr. Witte: I think that was identified by one of the witnesses as having come from a portion underneath.

Mr. Gallagher: Well, I will show——

Mr. Witte: It was during my examination.

Mr. Gallagher: I don't dare answer your Honor's question. I will show it came right from this very press.

[fol. 204] Mr. Friedman: May I be heard?

[Discussion at the bench.]

The Court: I will allow it and save your exception.

Q. 2. Now, what did this test reveal?

Mr. Friedman: I don't have to take any exceptions. Your Honor will allow them for the whole?

The Court: Yes."

The test merely revealed to us that one specimen had 25,600 and the other 26,800 pounds per square inch tensile strength. These tests were made on standard test bars conforming to Government standard on April 29th this year. The test bars were brought to me by Mr. Hovasse. I have been doing Government work since 1916 and have made this kind of test.

Q. 3. Now, with respect to the tensile strength—having a large casting, say 138 square inches in area at a cross-section—let's assume, first, it is a square block casting—where would you get the greatest tensile strength?

A. At the outside.

Q. 4. I show you Exhibit LLL, and that was a cross-section at the break. Now, assuming that the material at the outside was taken from the outside of the frame of the so-called Ohl press similar to the one in the model there except it isn't exactly like it, but somewhat similar to it, and assuming that you got the results that you did in the test, what would you say the general average tensile strength would be of that area?

Mr. Friedman: Wait a moment. What area?

Mr. Gallagher: Of the cross section. That is the same question you asked your expert, and we asked Professor Townsend. This is the outside. This gives the highest tensile strength.

The Court: All right. I will allow it and save your exceptions.

Q. 5. What do you say?

A. With the values that we obtained, on that bar, you take the outside of it, say, we wouldn't want to figure that much over 20,000 to 22,000.

Q. 6. For a general average.

A. For a general average.

Q. 7. Let me ask you whether or not there is some time a test made, taken in another way, on material?

A. Well, you either take them from coupons or in the casting itself.

[fol. 205] Q. 8. Which is the most accurate way?

A. Why, the coupons will invariably give the higher result.

Q. 9. And by coupons you mean what?

A. If you are making a casting, you simply cast a separate piece on the side of that casting."

On cross-examination the witness testified:

I was present when the tests were made, supervised them, didn't do the testing, which was done by two of my men. I do not know who made the test bars we tested. I didn't read the test machine myself. We calibrate and test these machines the first of every month for accuracy as a matter of precaution.

I don't know from what part of the machine these test bars come from. I testified on the basis of what I was told as to the place they came from. I was told they were taken from near the outside. If a test bar is taken from the section that has been overloaded it will show less strength than the section had before the overload, may be a couple of hundred pounds less.

"The Court: I want to ask one question, Mr. Mann. In the Government requirements for heavy castings, it says:

'The minimum tensile strength per square inch shall be 30,000 pounds.' That is considerably higher than in the cast iron trade, if there is such a thing, isn't it?

A. I don't think so. Our specifications have been patterned after the trade presses and I couldn't say definitely but I believe they are very closely to the latest A. S. T. M. —that is the American Society for testing materials.

The Court: All right:"

Charles J. Hovasse, recalled by Smith, testified:

I took to Mr. Mann the test bars tested by him. I took them from the broken stanchion just below the fracture at the extreme outside portion.

On cross-examination he testified:

Part of these test bars were taken out at the point of fracture. Of the two tests by Mr. Mann the bar taken from the place nearest the point of fracture showed 1,200 pounds per inch less strength than the one taken further away from the fracture.

[fol. 206] Both parties then rested.

At a recess during the trial counsel for Ohl called the court's attention — the fact that one of the jurors had been observed writing during the testimony of witnesses at the trial; and that another of the jury had been observed during the recess taking measurements of certain of the exhibits. Ohl through counsel orally requested the court to instruct the jury that such conduct was improper; that no notes of testimony or measurements of exhibits should be taken except under the instructions of the court in open court. There was no direct evidence of what the juror had been writing. The court ruled the matter immaterial and refused so to instruct the jury. Ohl duly excepted to such ruling and refusal, and the practice complained of at times was repeated.

Ohl as plaintiff then renewed the following motion which subject to Ohl's exception the court denied:

"The plaintiff moves that the defendant be required to elect whether it will proceed under its defense in this action or under its cross action being tried herewith."

Ohl as defendant then presented the following motion which subject to Ohl's exception the court denied:

"The defendant moves that the plaintiff be required to elect whether it will proceed with this action or rely upon its defense in the cross action being tried herewith."

Ohl as plaintiff then presented the following motion which subject to Ohl's exception the court denied:

"The plaintiff moves that the court herein direct a verdict for the plaintiff."

Ohl as defendant presented the following motion which subject to Ohl's exception the court denied:

"The defendant moves that the court herein direct a verdict for the defendant."

Ohl then presented the following requests for rulings:

[fol. 207] "Request for Rulings Filed by Geo. A. Ohl Co.

In these requests we refer to the first action as the Ohl case and to the second as the Smith case. These requests are made where applicable in each case.

1. Smith in neither case makes any complaint as to the dies bought of Ohl.

2. The Smith complaints in these cases concern only the machine itself.

3. Smith received, has retained, and still has the machine which Ohl delivered in performance of the contract between them.

4. In the Ohl case there was on all the evidence adequate consideration for the notes declared on.

5. In the Ohl case there was on all the evidence no total failure of consideration.

6. In the Ohl case on all the evidence the only partial failure or failures of consideration claimed by Smith arise through the alleged breaches of warranty.

7. Smith's defense in the Ohl case has the same legal effect as though that action were for a purchase price of the machine and the defense was by way of recoupment for breaches of warranty.

8. Smith may not at the same time defend in the Ohl case for a claimed failure of consideration and in the Smith case keep the machine and maintain an action against Ohl for claimed breaches of warranty.

9. Smith having elected to sue Ohl in an independent action for alleged breaches of warranty, and having elected to retain the machine, waived his defense in the Ohl case and is limited to such rights as he can establish in the Smith case.

9*a*. The contract between the parties is governed by the Sales Act.

10. The contract between Ohl and Smith is fully contained in Ohl's letter to Smith of November 9th (Exhibit 13), the specifications these referred to (a part of Exhibit 14), Smith's letter to Ohl of November 24 (Exhibit B), Ohl's letter to Smith of December 4 (Exhibit C) and its enclosure dated December 2d (Exhibit D) and the agree-[fol. 208] ment of March 1st with its attached rider dated March 9 (Exhibit A).

11. The rider of Exhibit A is an express warranty.

12. The express warranty of Exhibit A incorporates by reference to "our specifications of said press" so much of the specification of Exhibit 14 as concerns the capacity of the press stated in those specifications.

13. Those specifications expressly refer to a "bending" capacity.

14. The express warranty in this case is limited to a warranty of bending capacity.

15. The express warranty in this case is limited to a warranty of pending capacity and does not include a setting capacity as well as a bending capacity.

16. On all the evidence a machine of this type requires a greater capacity to bend and set soft steel on dies than merely to bend such soft steel on the same dies.

17. A claim of a warranty that the machine was to have a capacity to bend and set 3/8-inch soft steel (or any lesser thickness) on square dies the female of which measures three inches across the corners is inconsistent with the express language used in the express warranty which describes that capacity as for "one bend at a time," describes the machine as one "which will bend" the heavier guage of material and which will bring out "multiple bends."

18. The fact that the express warranty is for a bending capacity negatives the existence of any implied warranty that the machine would set a bend when made.

19. If the jury find that the machine had sufficient capacity to bend 3/8-inch soft steel one bend at a time on dies the female of which measures three inches across the corners, then Smith may not recover for any deficiency in the capacity of the machine.

20. On all the evidence the machine delivered to and received by Smith was of the design shown in Exhibits 13 and 14 (Ohl to Smith November 9, 1925 and enclosures, Exhibits 13 and 14).

21. There is no evidence that the design of the machine [fol. 209] in question call for any so-called safety device that was omitted in the machine when delivered.

22. The express warranty of Exhibit A does not require any so-called safety device.

23. The express warranty of Exhibit A "that the material and workmanship are of the best" does not include any warranty as to the design of the machine.

23a. The express warranty of Exhibit A that the machine has a capacity of 3/6-inch soft steel as stated in the specifications does not include a warranty as to the design of the machine.

24. If the machine had the capacity called for by the contract it is immaterial whether or not it had any device to prevent breakage when operated beyond that capacity.

25. Smith has specified that the press from the very beginning rendered unsatisfactory service in the particulars specified in Specifications 3-A to E.

26. It is uncontroverted that the press was first operated by Smith on April 15, 1926.

27. Smith herein is charged with actual knowledge beginning on or about April 15, 1926 of the claimed defects in the machine fairly within the scope of Specifications 3-A to E inclusive.

28. It is uncontroverted that the first notice to Ohl of any claim of any breach of warranty was that specified in Specification 9-A, letter of June 25, 1926. (Exhibit CC.)

29. On all the evidence Smith accepted the machine as that word is used in the *the* Sales Act.

30. The law provides that if Smith having accepted the machine failed to give Ohl notice of the breach of any promise or warranty within a reasonable time after he knew or ought to have known of such breach Ohl shall not be liable therefor.

31. Where the facts concerning the giving of such a notice are uncontroverted whether or not it is given within a reasonable time as required by statute becomes a question of law for the court.

32. The decisions of the Supreme Judicial Court of the [fol. 210] Commonwealth of Massachusetts in construing the Sales Act are binding upon this court.

33. A notice given on June 25 of breaches of warranty fairly within the scope of Specifications 3-A to E inclusive is as a matter of law not given within a reasonable time.

34. Smith may not recover for any breaches of warranty within the scope of Specifications 3-A to E inclusive.

35. The notice which the Sales Act calls for must fairly advise the seller of the alleged defects.

36. The June 25 notice (Exhibit CC) on the uncontroverted evidence of Smith erroneously refers to an alleged defect that did not then exist and that exhibit did not refer to the defect which Smith claims then existed.

37. The June 25 notice even though seasonably given was insufficient to satisfy the requirements of the Sales Act as to notice.

38. It is uncontroverted that the next notice claimed was that of August 13, 1926. (Exhibit EE, Specification 9.) That notice does not fairly advise Ohl of any alleged defect and, therefore, does not satisfy the requirements of the statute as to notice.

39. The next notice is that of August 23 which specifies a claim of failure to bend without material deflection and a defect in the clutch. (Exhibit II, Specification 9.)

40. On all the evidence the clutch defect claimed in that notice refers to a defect in the flywheel assembly, itself referred to in Specification 3-B.

41. Smith is charged with knowledge of that clutch trouble from the very beginning or from on or about April 15, 1926. (Specification 3.)

42. The August 23 notice as it concerns a claim of a clutch defect was as a matter of law not given within a reasonable time as required by statute.

43. The failure to bend material without a material deflection claimed in the August 13 notice is fairly within the scope of Specification 3-D.

44. Smith is charged with knowledge of the defect [fol. 211] claimed in that notice from the very beginning or from on or about April 15. (Specification 3.)

45. That notice as a matter of law was not given within a reasonable time as required by statute.

46. The next notice claimed is that of August 25. (Exhibit JJ, Specification 7.) That notice refers to various parts in the flywheel assembly more specifically described in the notice.

47. Smith is charged with knowledge of defective operation of that flywheel assembly from the very beginning or April 15, 1916. (Specification 3.) That notice as a matter of law was not given in time to satisfy the requirements of the statute as to notice so far as it concerns anything concerning the flywheel assembly.

48. That notice claims the 16-inch bushing was a poor loose fit and turned around. On Smith's own evidence it is uncontroverted that that bushing turned around and the looseness of fit was claimed to have been observed by Smith on April 15, 1926.

49. The August 25 notice as it concerns the 16-inch bushing was not given in time to satisfy the statute as to notice.

50. The next notice claimed is that of September 1 (Specification 9), which is specified to have been oral (Specification 10), and to have included the claimed defects defined in Specifications 11-A to E.

51. Specifications 11-C, D and E did not fairly advise Ohl of any claimed defects and are not sufficient to satisfy the requirements of the statute as to notice.

52. Specification 11-A is fairly within the scope of Specification 3-B and with that claimed defect Smith from the very beginning is charged with knowledge.

53. Specification 11-A was not a notice given within a reasonable time to satisfy the statute as to notice.

54. Specification 11-B is fairly within the scope of Specification 3-D and with that claimed defect Smith from the very beginning is charged with knowledge.

55. Specification 11-B was not a notice given within a reasonable time to satisfy the statute as to notice.

[fol. 212] 56. The next notice claimed was that of September 3. (Exhibit MM, Specification 9.)

57. That notice does not fairly advise Ohl of any claimed defect and is not sufficient to satisfy the statute as to notice.

58. Exhibit 20, the Swett-Townsend report, is not a notice given so as to satisfy the requirements of the statute as to notice.

59. That bowing of the plate after bending if due to the machine was a defect fairly within the scope of Specification 3-D with knowledge of which Smith is charged from the very beginning or on or about April 15, 1926.

60. As to that bowing, Exhibit 20 is not a notice given in time to satisfy the requirements of the statute.

61. Ohl is not responsible for any damage to the machine resulting from the tentative sub-support criticized in Exhibit 20.

62. The Smith Company is bound by and limited to matters set out in its specifications.

63. An express warranty negatives all other warranties or conditions inconsistent with it.

64. The express warranty given by Ohl to Smith as shown in Exhibit A does not contract that the machine will bend 3/8-inch soft steel to any given angle.

65. The lack of any safety device other than the 25-inch diameter friction clutch was a matter apparent to Smith at the time the machine was delivered and assembled and before April 15, 1926.

66. No notice of complaint based on any lack of a safety device other than such friction clutch prior to Exhibit 20 of November 22, 1926 is in evidence.

67. Smith may not recover for any damage due to any lack of any safety device other than the 25-inch diameter friction clutch.

68. Smith's claim is that the machine should have capacity (a) on dies the female of which is 3 inches across the corners (b) using 3/8 inch soft steel (c) to bend (d) and set the bend (e) to a 90 degree angle (f) at one operation.

[fol. 213] 69. The elements a, b and c in the foregoing request are within the express warranty but none of the elements d, e or f are within that express warranty and even if the Ohl machine could not perform d, e and f, there is no liability on the Ohl Company for breach of any warranty on that score.

70. The express warranty of the Ohl Company is in writing, in plain unambiguous language, and its construction is a question of law for the court.

71. That there is no language used in the express warranty that has any peculiar or trade meaning.

72. That there is no evidence in the case to give to any language used in the warranty any meaning other than its ordinary everyday meaning.

73. The meaning of the express warranty is that the machine is not required to do anything more than to bend ⅜-inch soft steel on dies the female of which measures 3 inches across the corner.

74. To bend metal is different from setting it. The process of bending metal does not necessarily include the process of setting.

75. The common accepted definition of 'to bend' is to bring into a curve or out of or aside from a straight line.

76. The common accepted definition of 'to set' is to put into a fixed permanent or immovable condition, position or form."

The court then charged the jury as follows:

"CHARGE TO THE JURY—LOWELL, J.

The Court: MR. FOREMAN AND GENTLEMEN: There is really very little I can say to you in this case, but I will start first by saying what you probably already know, and that is as to our respective functions, that is, my function and yours.

My function is, in the first place, to tell you the law and by that you are bound. In the second place, or, rather, the right I have in the second place is, if I care to, to give you my opinion on any witness or on the facts. But that part of the case is entirely in your hands. If I should say, for instance, that Mr. Ohl was to be believed or was not to [fol. 214] be believed, either one of the two, that statement would not be binding upon you because with you rests the deciding of the facts.

Now, the law in this case really is simple. The Ohl Company sold and warranted expressly in writing that it would bend a three-eighths piece of steel on a three-inch die. That was expressly warranted. There is also an implied warranty as it is called that the machine would do perfect work. That is simply all the law there is to it, really.

It all becomes a question of fact. There is as a question of law evidence as to whether a notice of defect was given within a reasonable time, and on that I rule that it was so given, and exception will be taken to that ruling.

So the only question here is—was that machine a reasonable and proper machine, and did it in fact bend this steel, this soft steel, in the way which the manufacturer, Ohl, agreed that it would bend that steel. All these figures are a good deal over my head, and you know all about it, and I don't, so there is no use of my pretending to you that I do, and if I try to tell you about that I would mix you up more than I myself got mixed up on it. But it is all a question of fact.

There is a minor question of bending, and the difference between bending and setting. I don't personally get the idea of what you want to set steel for, or bend it rather, without setting. I don't quite see what that amounts to, but you are the arbiters of that, and it is for you to say whether in making these risers and stringers that the iron must not only be bent but must be set. All that is within your province.

The whole thing, I say, comes down to a question of fact. Would this machine bend the iron in a proper way to turn out merchantable stair treads and risers and stringers. And, of course, there is the question of the break in that machine. It is for you to say whether it broke under a fair trial, or whether at the time that it broke it had an improper load put on it, and the machine was operating improperly. The question of the strength of the material, and what its strength really was, and what it ought to have been, is also for you. Also, there is a disputed question [fol. 215] about whether a safety device of some kind was necessary and whether this clutch amounted to a safety device in that it would slip if it was properly adjusted. Those are the questions of fact, gentlemen, on which you are the final judges.

There is a question of fact, however, which perhaps I ought to warn you about—and I am warning you about it for this reason—I think it has unduly influenced me. The Ohl Company sent to the Smith Company a young man, I am sorry to say he is now a lawyer, named Dailey. I will admit I have been somewhat prejudiced against the Ohl Company in my own mind on account of their witness Dailey, and I really think I ought to warn you not to be too prejudiced against the Ohl Company for their mistake in sending that liar to the Smith shop to look at that machine,

because it is natural for you and me to love the truth, and think very badly of Mr. Dailey. I think you ought not be unduly prejudiced against the Ohl Company from the fact that that man was sent there.

Now, in the first place, there are two cases here. It has been treated all along as if there were only one, but there are two. In the first place, the Ohl Company sues for the balance of the note which has not been paid. As we have the figures, the Smith Company has paid in the neighborhood of $5,000, $4,963 to be exact, and there are notes still due of $6,504. The first suit is to recover that amount of the notes. The second suit is by the Smith Company, to recover back that sum of money which they paid—that $5,000, and in addition to recover a certain amount which they had paid for repairs, and so on, on the machine. The Smith Company keeps the machine. The Smith Company has not said that the dies were improper; they have said that the machine is no good and will not do the work that they promised it would do, and they say it isn't worth the $5,000 that they spent for it. Now, it is up to you to say on this whole case—in the first place, did the machine do or would the machine have done, if properly handled and operated, the work in turning or bending these soft steel plates? If you [fol. 216] find that it would do that, then your verdict must be for the Ohl Company for the full amount of what they are suing for.

If, on the other hand, you find the machine would not do it, you then must make up your minds what that machine is worth in its present condition, or what it would have been worth, rather, at the time before it was broken, what a machine like that machine, which wouldn't do quite what it was agreed to do—what that would have been worth at the time before it broke.

There is some evidence as to the present value of that machine, and you may find on that what it is. And then, when you have found that amount, you may also find for the plaintiff for the sum of money which they spent in fixing up the flywheel in one case and also the repairing of the machine. As I have the figures here, they are $2,431.75.

So, with the Smith Company having paid nearly $5,000 and having spent nearly $2,500, you will find what the machine is worth, and if it is worth less than the $5,000 they paid, you may find a verdict for the difference for the Smith

Company, and in addition to that you may add to it the amount which they spent for repairs in the neighborhood of $2,500. I think that is all I need to say, gentlemen.

The verdicts, gentlemen, are to be signed by the foreman and we have a printed form here. In the first case, the George A. Ohl & Company v. Smith Iron Works,—if you find for Ohl in that case, the Ohl Company, you sign the verdict which says the jury find for the plaintiff and assess damages in the sum of whatever amount you may find.

If you find for the Smith Company in that first case, the foreman signs the verdict which says the jury find for the defendant.

The same thing is true in the other case of the Smith Iron Works v. The George A. Ohl & Company. If in that case you find for the Smith Iron Works, the foreman signs the verdict which says that the jury find for the plaintiff, and then you add the damages which you find. If, however, in the second case, you find for the Ohl Company, the foreman signs the verdict saying that the jury find for the defendant."

[fol. 217] [Discussion of the bench.]

"The Court: Mr. Foreman and gentlemen, my attention is called to this, which I neglected to tell you. If you find for the Smith Iron Works, I told you that you might find in a certain amount for the repairs to the machine. My attention is drawn to the fact that there is evidence that such repairs might have been done in a cheaper manner. It is for you to say about that. There is sometihng about welding the machine into position or something with an electric welder, if that was the name, which would cost less, and some other evidence along that line, which I have forgotten. So, it is for you to find whether this figure, $2,431.75, is a reasonable figure for repairs or whether they should have had the repairs done at a less cost. That is all I care to say, gentlemen."

Exceptions to Charge

The court refused all of Ohl's requests except numbers 1 and 31, to which refusals to rule Ohl excepted.

Ohl excepted to the charge as follows, to so much thereof as stated:

A. There was an implied warranty that the machine would do perfect work.

B. That is simply all the law there is to it.

C. I rule that notice of the defect was given within reasonable time.

D. That the only question was whether that machine was reasonable and proper and did in fact bend this steel in the way Ohl agreed it would bend that steel.

E. That is all a question of fact.

F. That there is a minor question of bending and a difference between bending and setting; that the court doesn't personally get the idea of what you want to set steel for or bend it without setting it.

G. That the court doesn't see what that amounts to; that it is for the jury to say whether in making these risers and stringers that the iron must not only be bent but must be set.

H. That the whole thing is a question of fact. Would this [fol. 218] machine bend the iron in a proper way to turn out merchantable stair treads, risers and stringers?

I. That it is for the jury to say whether the machine broke under a fair trial or whether at the time it broke it had an improper -oad on it and was being operated improperly.

J. That it is for the jury to say what the machine really was and what it ought to have been. That the disputed question as to whether a safety device was necessary and whether this clutch amounted to a safety device is a question for the jury.

K. That Ohl made a mistake in sending that liar Dailey to Smith's.

L. That is up to the jury to say on the whole case would the machine if properly handled and operated do the work in turning or bending these plates.

M. That the jury consider the worth of the machine in its condition before it was broken.

N. That the jury may find the present value of the machine.

O. That the jury might find for Smith for the sum spent in repairs to the flywheel and in repairing the machine.

P. That the jury is to find what the machine is worth.

Q. That the jury may find in addition for Smith the cost of repairs in the neighborhood of two thousand five hundred dollars ($2,500).

R. To the charge as a whole in that it did not adequately instruct the jury on the issues raised by the pleadings, specifications, evidence, and requests for rulings.

S. That the charge failed to present to the jury the issues of the case.

T. That the charge failed to give to the jury instructions to guide them in the issues of law involved in the case and raised by the evidence and Ohl's requests for instructions.

U. That the charge failed to instruct the jury as to its verdict in the Ohl v. Smith case in the event it found the machine not as the contract called for.

The case was then submitted to the jury, who later returned a verdict for the defendant in the first case, Ohl v. [fol. 219] Smith, and in the second case, Smith v. Ohl, a verdict for the plaintiff in the sum of seven thousand five hundred dollars ($7,500).

Certain exhibits introduced and submitted herewith under stipulation are herein incorporated by reference in addition to those set forth in the foregoing bill.

Wherefore George A. Ohl Company, being aggrieved by the above rulings, refusals to rule, admissions and exclusion of evidence, prays that this its bill of exceptions in each of the two cases be allowed.

Lee M. Friedman, by Friedman, Atherton, King & Turner, Its Attorneys.

Assented to.

Martin Witte, Robert Gallagher, Attorneys for A. L. Smith Iron Works, Plaintiff and Defendant.

Allowed August 20, 1930.

J. A. L., D. J.

IN UNITED STATES DISTRICT COURT

Law. No. 3210

GEORGE A. OHL & CO.

v.

A. L. SMITH IRON WORKS

Law. No. 3267

A. L. SMITH IRON WORKS

v.

GEORGE A. OHL & CO.

STIPULATION WITH REFERENCE TO EXHIBITS RE APPEAL—
Filed August 8, 1930

In the above-entitled cases it is agreed that the following original exhibits be not printed as part of the record but that originals or copies approved by counsel be transmitted by the clerk of the District Court to the clerk of the Circuit Court of Appeals for the First Circuit to be used by that court as a part of the original record herein:

1. Exhibit D, confirmation from George A. Ohl & Co. to [fol. 220] A. L. Smith Iron Works, dated December 2, 1925, of order for machine and accessories.

2. Exhibit K, Smith's letter to Ohl of January 9, 1926.

3. Exhibit P, Ohl's blueprint No. 490 showing various types of dies and being one of the enclosures referred to in Exhibit 13, Ohl's letter to Smith of November 9, 1924.

4. Exhibit X, a blueprint and typewritten instructions for setting up the machine.

5. Exhibit SS, Ohl's blueprint No. 331, called the foundation plan.

6. Exhibit TT, a photograph of the machine in question taken after the break and repairs, from a position facing the rear of the machine.

7. Exhibit WW, Smith's photograph of the 16-inch bushing.

8. Exhibits BBB, CCC, DDD, EEE, FFF and GGG, Smith's photographs of the machine after installation and break.

9. Exhibit HHH, an outline diagram of the broken stanchion referred to in the Perkins report, Exhibit NNN.

10. Exhibit LLL, a cross section diagram of the stanchion at point of fracture.

11. Exhibit OOO; it is especially stipulated these were four pieces of metal originally comprising two test bars made according to the specifications shown on Exhibit RRR figure 2 and from material taken from the outside surface of the stanchion that broke at the point of fracture.

12. Exhibit PPP, Smith's photograph of that part of the machine where the brake member was that was broken.

13. Exhibit QQQ, being Smith's photograph similar to PPP.

14. Exhibit RRR, the United States Army Ordnance Department Metal Specifications.

15. Exhibit TTT, being Smith's photograph of the material removed from the outer surface of the broken stanchion at point of fracture from which test bars Exhibit OOO were made.

16. Exhibit UUU, being Smith's further photograph of material removed for test bar purposes.

[fol. 221] 17. Exhibit 14, six blueprints, which accompanied the two typewritten pages of specifications set forth in the bill of exceptions and being the additional enclosures referred to in Exhibit 13.

18. Exhibit 17, a like confirmation dated January 18, 1926 covering dies.

19. Exhibit 28, the foundry test record with reference to the stanchion that broke.

20. Exhibit 29, the foundry test record concerning the second stanchion.

21. Exhibit 32, the pamphlet of the American Society of Testing Materials.

Lee M. Friedman, Friedman, Atherton, King & Turner, Attorneys George A. Ohl & Co. Martin Witte, Robert Gallagher, Attorneys A. L. Smith Iron Works.

IN UNITED STATES DISTRICT COURT

PLAINTIFF'S BILL OF EXCEPTIONS CONCERNING PLAINTIFF'S MOTION FOR NEW TRIAL—Filed May 21, 1930; allowed August 20, 1930

The plaintiff herein duly filed within the required time its motion for a new trial of which a copy is attached hereto, and duly served a copy thereof on opposing counsel. The motion was brought forward and heard by the court on May 14, 1930, and subject to the plaintiff's exception was overruled and denied.

The motion was based upon evidence, facts, rulings, refusals to rule, instructions, and verdict more fully set forth in this plaintiff's main bill of exceptions, and in the final substitute therefor as allowed, which so far as material hereto by reference is incorporated herein and made a part hereof. It also was based in part upon the statement after verdict by the foreman and one other of the jury to one of counsel for Ohl in substance that they intended by their verdicts to have the unpaid notes declared on in Ohl v. Smith applied as credits against the $7,500 verdict in Smith v. Ohl.

Wherefore, George A. Ohl & Co., being aggrieved by the [fol. 222] above ruling and denial, prays that this its bill of exceptions herein be allowed.

Lee M. Friedman, Friedman, Atherton, King & Turner, Its Attorneys.

Assented to.

Martin Witte, Robert Gallagher, Attorneys for Defendant.

Allowed August 20, 1930.

J. A. L., D. J.

IN UNITED STATES DISTRICT COURT

PLAINTIFF'S PETITION FOR APPEAL AND SUPERSEDEAS—Filed November 25, 1930

Considering itself aggrieved by the final judgment of your court entered in the above entitled cause against it, and in favor of the above-named defendant, A. L. Smith Iron Works, on the eighth day of September 1930, George A. Ohl & Co., the above-named plaintiff, a corporation duly organized and existing under the laws of the State of New Jersey, and having its usual place of business in Newark in said New Jersey, hereby prays that an appeal be allowed to the United States Circuit Court of Appeals for the First Circuit. In connection with this petition the petitioner herewith presents his assignment of errors.

Your petitioner further prays that an order of supersedeas may be entered herein pending the final disposition of the cause, and that there be entered an order fixing the amount of the bond on such appeal.

George A. Ohl & Co., by Lee M. Friedman, Friedman, Atherton, King & Turner, Its Attorneys.

[fol. 223] Above petition for appeal is allowed this twenty-fifth day of November 1930.

James A. Lowell, United States District Judge.

IN UNITED STATES DISTRICT COURT

PLAINTIFF'S ASSIGNMENT OF ERRORS—Filed Nov. 25, 1930

The plaintiff in this section assigns as errors those assignments set forth in the assignment of errors in action A. L. Smith Iron Works v. George A. Ohl & Co., Law No. 3267, adopts the same as its assignment of errors herein and by reference incorporates the same herein.

Lee M. Friedman, Friedman, Atherton, King & Turner, Its Attorneys.

Bond on appeal for $250.000, approved and filed November 25, 1930, omitted in printing.

[fol. 224] In United States District Court

Plaintiff's Præcipe for Transcript of Record—Filed November 25, 1930

1. Writ and return.
2. Declaration, omitting counts 2 to 13 and Exhibits B to L all inclusive and substituting therefor the following: "Counts 2 to 12 both inclusive are on the defendant's promissory notes Exhibits B to L both inclusive, omitted herein, as they are the same as Count 1 and Exhibit A except that each such note is one month later in date of payment than the preceding."
3. Defendant's answer.
4. Plaintiff's motion for specifications.
5. Jury empanelled.
6. Plaintiff's motion for election and order.
7. Plaintiff's motion for directed verdict and order.
8. Jury verdict.
9. Plaintiff's motion for new trial.
10. Plaintiff's bill of exceptions.

[fol. 225] 11. Hearing on motion for new trial and order.
12. Plaintiff's bill of exceptions with reference to motion for new trial, omitting therefrom the copy of the motion for a new trial attached.
13. Plaintiff's petition for appeal.
14. Plaintiff's assignment of errors.
15. Plaintiff's bond on appeal.

Lee M. Friedman, Friedman, Atherton, King & Turner, Its Attorneys.

November 25, 1930.

Service of the above præcipe is hereby acknowledged and the right to file a cross præcipe is waived.

Martin Witte, Attorney for A. L. Smith Iron Works, Defendant.

Citation, in usual form, showing service on Martin Witte, omitted in printing.

[fol. 226] Clerk's certificate to foregoing transcript omitted in printing.

[fol. 227] [Caption omitted]

IN UNITED STATES DISTRICT COURT, DISTRICT OF MASSACHUSETTS

No. 3267, Law Docket

THE A. L. SMITH IRON WORKS, Plaintiff,

v.

GEORGE A. OHL & Co., Defendant

WRIT OF ATTACHMENT AND SERVICE

MASSACHUSETTS DISTRICT, *ss:*

[L. S.]

The President of the United States of America to the Marshal of our District of Massachusetts or his Deputy, Greeting:

We command you to attach the goods or estate of George A. Ohl & Co., a corporation duly organized under the laws of the State of New Jersey, and domiciled in and having a usual place of business in Newark, New Jersey, Defendant, in our District of Massachusetts, to the value of ten thousand ($10,000) dollars, and summons the said defendant (if it may be be found in your district) to appear before our Judge of our District Court, next to be holden at Boston, within and for our said District of Mas-
[fol. 228] sachusetts, on the third Tuesday of March, 1928, then and there, in our said court, to answer unto The A. L. Smith Iron Works, a corporation duly organized under the laws of the Commonwealth of Massachusetts, and domiciled in and having an usual place of business in Chelsea, in an action of contract to the damage of the said plaintiff (as it says) the sum of ten thousand dollars, which shall then and there be made to appear, with other due damages. And have you there this Writ, with your doings therein.

Witness, the Honorable James M. Morton, Jr., at Bos-

ton, the seventh day of December, in the year of our Lord one thousand nine hundred and twenty-seven.

Mary E. Prendergast, Deputy Clerk.

Acceptance of Service on Writ

Boston, December 7, 1927.

Due and sufficient service of the within process is hereby accepted by me on behalf of the within named defendant.

George A. Ohl & Co., by Lee M. Friedman, Friedman, Atherton, King & Turner, Its Attorneys.

The writ in this cause is dated the seventh day of December, A. D. 1927, and was duly entered at the March Term of this court, A. D. 1928, when and where the parties appeared by their respective attorneys.

In United States District Court

Declaration—Filed March 20, 1928

And the plaintiff says that on or about the first day of March, 1926 it entered into a written agreement with the defendant, drawn in the form of a lease, for the purchase and sale of one (1) standard 12-foot 6-inch 103,000 pound power press and six sets of dies for a total purchase price of $12,014.68, title to which machine was to remain in the [fol. 229] defendant until said purchase price was paid in full; that by the terms of this agreement the defendant let unto the plaintiff the aforesaid press for a term of eighteen months from March 1, 1926 for a total rental of $12,009.68, to be paid by the plaintiff as follows: $1,000 in cash with order, $1,000 when machine was ready for delivery and $250 in cash with the order for the dies (all of which, amounting to $2,500, was paid at the time the aforesaid agreement was executed) and the balance of $9,759.68 by eighteen negotiable monthly notes, the first note for $545.68 and the remaining seventeen for $545 each, the first note payable 30 days from the day of this agreement and the remaining notes at successive monthly intervals, said notes not to be considered as payment until they were actually paid in cash with interest at six per centum per annum;

that the defendant further agreed that if the plaintiff performed certain covenants more particularly set out in the aforesaid agreement and made no default in the payment of the aforesaid sums, and if the lease was not sooner terminated by mutual consent or otherwise, it would, on the payment to it by the plaintiff of the additional sum of five dollars, execute and deliver to the plaintiff a bill of sale for the said machine and its accompanying dies in consideration of this payment of five dollars and of the sum of $12,009.68 that was paid as rent.

That by a rider dated March 9, 1926, attached to the aforesaid agreement and made a part thereof, the defendant warranted that the press had the capacity stated in the defendant company's specifications of the said press, namely, that it would bend ⅜-inch soft steel on square dies the female of which measured 3 inches across the corners, and that the material and workmanship was of the best.

A copy of said agreement with the rider attached thereto is hereto annexed marked "A" and expressly made a part hereof.

That the plaintiff is engaged in the business of fabricating, manufacturing and installing architectural, ornamental and structural steel and ironwork and that it purchased said power press for use in its factory, all of which [fol. 230] facts were well known to the defendant; and that in making said purchase the plaintiff relied upon the warranty as aforesaid.

That the said machine, a ponderous machine weighing well over fifty (50) tons capable of exerting a pressure of 800,000 pounds, was delivered to the plaintiff at its place of business at 217 Everett Avenue, Chelsea, and that it was properly set up and installed by the agents and servants of the plaintiff under the supervision of its master mechanic; that from the very beginning the said press rendered unsatisfactory service and in no way accomplished the purposes for which it was purchased nor did it conform to the warranties and specifications hereinabove referred to; that it failed to bend properly sheets of soft steel ⅜ of an inch in thickness, and that the sheets thus bent showed a decided bowing in two directions, a material deflection that made it impossible to use them without employing additional man power after each operation to recover these sheets from the deflection; that the results were

the same even when sheets of steel less than ⅜ of an inch in thickness were used; that the press developed mechanical defects that were directly traceable to poor material and workmanship; that as a direct consequence and result of poor material and workmanship and while the machine was being used on sheets of steel much less in thickness than the ⅜ of an inch thickness that the machine was guaranteed to bend, the end upright or stanchion at the opposite end of the motor broke in two places, rendering the machine unfit for use without extensive and expensive repairs.

That the plaintiff notified the defendant of various imperfections as soon as they became apparent and that it continued to apprise the defendant of the various developments hereinabove referred to; that it followed the suggestions that were made by the defendant and took every possible precaution in the operation of the press, but that all steps proved unavailing; that it continued payments to the defendant under the aforesaid agreement for five months in the hope that the press would perform according to the warranty and specifications that accompanied it; that in all other respects the plaintiff performed its part [fol. 231] of said agreement; and that finally, on or about the twelfth day of August, 1926, it notified the defendant that it would refrain from making any further payments under the aforesaid agreement until the press was put into the condition required by the specifications and warranty.

That said machine has greatly depreciated in value as a result of its failure to conform to the warranty and specifications as aforesaid; and that as a natural consequence and proximate result of the unsatisfactory operation and improper construction of the press as aforesaid the plaintiff suffered and incurred great losses in its business, and was put to great expense in repairing said press and in having to send work outside to be done which could otherwise have been performed on said press in the plaintiff's factory, all of which was in the contemplation of the parties to the agreement of the sale at the time it was entered into. All to the damage of the plaintiff as set forth in its writ.

By its Attorney, Marvin Witte.

[Memorandum.—Copy of agreement, marked "Exhibit A", referred to in the foregoing declaration as annexed, is here omitted as said agreement is made part of the substituted bill of exceptions, and will be found printed on page 11 of this Transcript of Record.—James S. Allen, Clerk.]

In United States District Court

Defendant's Answer—Filed March 29, 1928

The defendant admits that it entered into a contract in writing with the plaintiff under date of March 1, 1926 of which contract a copy is annexed to the plaintiff's declaration, and that it delivered to the plaintiff the power press and dies in said contract defined and that the cash and notes called for by said contract to be delivered by the plaintiff to the defendant were so delivered. Otherwise than is above specifically admitted each allegation, item and particular in the plaintiff's writ and declaration contained is denied as fully and effectually as if each and the same were herein specifically set forth and separately denied. [fol. 232] And further answering the defendant says that the material called for by said contract in writing was examined, inspected and tested by the plaintiff and was accepted by the plaintiff as a proper delivery in satisfaction of the defendant's obligations prior to the physical delivery thereof by the defendant to the plaintiff.

Friedman, Atherton, King & Turner, Its Attorneys.

In United States District Court

Defendant's Motion for Specifications—Filed May 19, 1928

The defendant moves that the plaintiff be ordered to specify as follows:

1. The date upon which the press described in the plaintiff's declaration was set up and installed by the plaintiff as in page 2, last paragraph of the declaration, alleged.

2. The date when said press was first operated by the plaintiff after being set up and installed by the plaintiff.

3. In what particulars from the very beginning the press referred to in the plaintiff's declaration rendered unsatisfactory service as alleged in the plaintiff's declaration, page 2, last paragraph.

4. In what particulars said press failed to accomplish the purposes for which it was purchased as alleged in the plaintiff's declaration, page 2, last paragraph.

5. In what particulars said press failed to conform to the warranties and specifications referred to in the plaintiff's declaration and as alleged in that declaration, page 2, last paragraph.

6. In what particulars said press failed properly to bend sheets of soft steel ⅜ inch in thickness as alleged in the plaintiff's declaration, page 2, last paragraph, and page 3, first paragraph.

7. In what particulars the press developed mechanical defects that were directly traceable to poor material and workmanship as alleged in the plaintiff's declaration, page 3, first paragraph.

8. In what particulars the workmanship and material was [fol. 233] poor in said press and which resulted in the breaking of the press as alleged in page 3, first paragraph of the declaration.

9. The date of each notice alleged in paragraph — page 3. of the declaration.

10. Whether each such notice was written, oral or in part written and in part oral.

11. Set forth the material parts of each such notice as was wholly or partially oral.

12. Set forth when, where and to whom representing the defendant each notice that was wholly or partially oral was given.

By its Attorneys, Friedman, Atherton, King & Turner.

Also at the same term, to wit, June 4, 1928, the plaintiff's answer to the defendant's motion for specifications was filed.

This cause was thence continued from term to term to the December Term, A. D. 1928, when, to wit, December 7, 1928, a motion was filed to amend plaintiff's answer to defendant's motion for specifications and was assented to, plaintiff's amended answer to defendant's motion for specifications being as follows:

IN UNITED STATES DISTRICT COURT

PLAINTIFF'S AMENDED ANSWER TO DEFENDANT'S MOTION FOR SPECIFICATIONS—Original answer filed July 4, 1928; amended December 7, 1928

[MEMORANDUM.—Copy of plaintiff's amended answer to defendant's motion for specifications is here omitted, as it is made part of the substituted bill of exceptions, and will be found printed on pages 8 to 11 of this Transcript of Record.—James S. Allen, Clerk.]

IN UNITED STATES DISTRICT COURT

MINUTE ENTRIES OF TRIAL

This cause was thence continued to the March Term, A. D. 1929, when, to wit, April 16, 1929, issue having been joined, a jury was duly empanelled to try the issue, the Honorable James A. Lowell, District Judge, sitting.

Said cause was thereupon set down for hearing and was tried with case No. 3210, Law Docket, George A. Ohl & Co., Plaintiff, v. A. L. Smith Iron Works, Defendant, on the seventeenth, eighteenth, twenty-third, twenty-fourth, twenty-fifth, twenty-sixth and thirtieth days of April, A. D. [fol. 234] 1929, and on the first, second, third and seventh days of May, A. D. 1929.

On the said twenty-fifth day of April, A. D. 1929, the following Motion for Election was filed by the defendant, and denied by the court:

IN UNITED STATES DISTRICT COURT

MOTION FOR ELECTION—Filed April 25, 1929

The defendant moves that the plaintiff be required to elect whether it will proceed with this action or rely upon its defense in the cross action being tried herewith.

Friedman, Atherton, King & Turner, its Attorneys.

Also, on the same day, the following Motion for Directed Verdict was filed by the defendant and denied by the court:

IN UNITED STATES DISTRICT COURT

MOTION FOR DIRECTED VERDICT—Filed April 25, 1929

The defendant moves that the court herein direct a verdict for the defendant.

Friedman, Atherton, King & Turner, its Attorneys.

IN UNITED STATES DISTRICT COURT

VERDICT—May 7, 1929

The jury find for the plaintiff, nd assess damages in the sum of seventy-five hundred dollars ($7,500).

Fred H. MacDonald, Foreman.

[fol. 235] IN UNITED STATES DISTRICT COURT

DEFENDANT'S MOTION FOR NEW TRIAL—Filed May 9, 1929

The defendant in this action now moves that the verdict of the jury be set aside and moves that a new trial be granted on the following grounds, to wit:

1. One of the jurors during the trial took notes concerning evidence and testimony and used the same during the deliberations of the jury.

2. One of the jurors took notes during the arguments and used the same during the deliberations of the jury.

3. One or more of the jurors took measurements of exhibits during trial recesses and referred to the same during the deliberations of the jury.

4. The verdict as it concerns the plaintiff's damage is excessive.

5. The verdict as it concerns the plaintiff's damage is against the evidence.

6. The verdict as it concerns the plaintiff's damage is against the weight of the evidence.

7. The verdict as it concerns the plaintiff's damage is against the law and the evidence.

8. The verdict as it concerns the plaintiff's damage is against the law.

Lee M. Friedman, Friedman, Atherton, King & Turner, its Attorneys.

IN UNITED STATES DISTRICT COURT

MINUTE ENTRIES OF HEARING

This cause was thence continued from term to term to the September Term, A. D. 1929, when, to wit, September 30, 1929, a draft bill of exceptions was filed by the defendant within extended time.

This cause was thence continued from term to term to the March Term, A. D. 1930, when, to wit, May 14, 1930, said cause was set down for hearing on the aforementioned motion for new trial, the Honorable James A. Lowell, District Judge, sitting, and it was ordered that said motion for new trial be overruled.

[fol. 236] At the same term, to wit, May 21, 1930, a draft bill of exceptions concerning defendant's motion for new trial was filed and assented to.

This cause was thence continued to the present June Term, A. D. 1930, when, to wit, August 8, 1930, a substituted bill of exceptions on behalf of George A. Ohl & Co.,

applying also to the aforementioned case No. 3210, Law Docket, is filed and assented to.

On the said eighth day of August, a motion to amend substituted bill of exceptions is filed.

Also on the said eighth day of August, A. D. 1930, a stipulation with reference to exhibits re appeal is filed.

On the twentieth day of August, A. D. 1930, the substituted bill of exceptions, the motion to amend substitute bill of exceptions, and the bill of exceptions concerning plaintiff's motion for new trial are allowed.

IN UNITED STATES DISTRICT COURT

JUDGMENT

Thereupon, to wit, September 8, 1930, it is considered by the court, the Honorable James A. Lowell, District Judge, sitting, that the said A. L. Smith Iron Works, plaintiff, recover of the said George A. Ohl & Co., defendant, the sum of seventy-five hundred dollars ($7,500) damages, together with interest amounting to six hundred and one dollars and twenty-five cents ($601.25), and its costs of suit taxed at —.

IN UNITED STATES DISTRICT COURT

No. 3210, Law Docket

GEORGE A. OHL & Co.

v.

A. L. SMITH IRON WORKS

No. 3267, Law Docket

A. L. SMITH IRON WORKS

v.

GEORGE A. OHL & Co.

Substitute Bill of Exceptions on Behalf of George A. Ohl & Co.—Filed August 8, 1930; amended and allowed August 20, 1930

[MEMORANDUM.—Copy of substitute bill of exceptions on behalf of George A. Ohl & Co. is here omitted as it already

appears of record in case No. 3210, Law, and will be found printed on pages 7 to 219 of this volume.—James S. Allen, Clerk.]

[fol. 237] In United States District Court

Defendant's Bill of Exceptions Concerning Defendant's Motion for New Trial—Filed May 21, 1930; allowed August 20, 1930

[Memorandum.—Copy of defendant's bill of exceptions concerning motion for new trial is here omitted, as it is identical with the one printed in case No. 3210, Law Docket, with the exception of the word "defendant" to be inserted in place of "plaintiff", and will be found printed on pages 221, 222 of this volume.—James S. Allen, Clerk.]

In United States District Court

Stipulation with Reference to Exhibits re Appeal—Filed August 8, 1930

[Memorandum.—Copy of stipulation as to exhibits is here omitted, as it already appears as part of the transcript of record in No. 3210, Law Docket, and will be found printed on pages 219 to 221 of this volume.—James S. Allen, Clerk.]

In United States District Court

Defendant's Petition for Appeal and Supersedeas—Filed November 25, 1930

Considering itself aggrieved by the final judgment of your court entered in the above-entitled cause against it, and in favor of the above-named plaintiff, A. L. Smith Iron Works, on the eighth day of September, 1930, George A. Ohl & Co., the above-named defendant, a corporation duly organized and existing under the laws of the State of New Jersey and having its usual place of business in Newark in said New Jersey, hereby prays that an appeal be allowed to the United

States Circuit Court of Appeals for the First Circuit. In connection with this petition, the petitioner herewith presents its assignment of errors.

Your petitioner further prays that an order of supersedeas may be entered herein pending the final disposition of the cause, and that there be entered an order fixing the amount of the bond on such appeal.

George A. Ohl & Co., by Lee M. Friedman, Friedman, Atherton, King & Turner, Its Attorneys.

[fol. 238] Above petition for appeal is allowed this twenty-fifth day of November, 1930.

James A. Lowell, United States District Judge.

In United States District Court

Law. No. 3267

A. L. Smith Iron Works

v.

George A. Ohl & Co.

Law. No. 3210

George A. Ohl & Co.

v.

A. L. Smith Iron Works

Assignment of Errors—Filed Nov. 25, 1930

This assignment is filed by George A. Ohl & Co. physically in the first of the above actions and by reference in the second. George A. Ohl & Co. is referred to as "Ohl" and the A. L. Smith Iron Works as "Smith".

Ohl's assignment of errors are as follows:

1. The court erred in admitting testimony of conversations prior to the execution and delivery of the written contract declared on by Smith in part as follows:

Mr. Smith as Smith's witness on direct:

"Q. As near as you can fix it now—we will assume it was later than October—could you tell what talk you had?

[Discussion at the bench.]

The Court: I will allow it and save your exception.

Mr. Friedman: Save my exception to all the oral conversation prior to the date of the written contract declared on.

The Court: All right.

Q. Now, will you state if you can the substance of your first talk with Mr. Ohl with reference to this machine?"

The witness then testified:

"I visited Ohl's plant, asked to be shown through, asked a lot of questions about what the machines would do and told him what I wanted. The whole conversation naturally hinged on the machine. I cannot remember just what took place. I told Ohl I wanted a 12-foot 6-inch press and he replied, 'I can build it for you.' I told him I wanted a ma-[fol. 239] chine strong enough to bend ⅜ plates and he said, 'Yes, I can build one for you that will bend ½ inch.' We were looking at a 10-foot machine and he took me to see some 10-foot machine patterns and said, 'I can make that 12 foot 6 inches long.' I told him we wanted this machine for our Chelsea factory. I asked him whether his machine is as strong as a steel frame machine and he said, 'If I thought the other makes of machine made out of steel were better than mine I would make mine out of steel too.' I had never had any experience in making machines. I told Mr. Ohl what my line was, telling him substantially as described on the witness stand."

The witness had previously described that business as follows:

"The company is engaged in structural steel, ornamental iron business and at times in special work, buying the raw material in lengths for structural and in bars or sheets for ornamental purposes in carload lots shipped to the plant where it is fabricated according to plans, specifications and details. The machine in question relates only to the ornamental department operating on structural steel

plates, of all sizes, but in the ornamental department we usually use from ⅜ of an inch thick down. We commonly used from 1/16 inch thick and less up to 5/16. This steel is purchased under thickness or gauge specifications. It is placed on a machine and bent to form stair stringers or the sides of a stair upon which the tread and risers are riveted. The tread and risers are formed on the same machine on different dies of the same material. This is called ornamental work and the company generally installs it in the building where it is to be used under bids and according to plans and specifications. The stringers are usually bent to a 90 degree angle or square. It makes a difference whether the workmanship is straight or bowed. Bowing means that the plate after being bent is not perfectly straight but bowed on the edge; deflection is the [fol. 240] bending under pressure of the machine which straightens out when the pressure is removed; both bowing and deflection refer to lack of alignment; spreading means the angle is not perfectly square with the sides out of line."

Ohl said he had built machines all his life and sold them all over the world.

A week or two later when I gave the order Ohl said to me:

"If that machine didn't bend three-eighths you can have the machine for nothing, which he never did; that is, he didn't give me the machine for nothing."

"Q. About the lifetime of the machine. Anything said of that sort?

A. Well, there was a guarantee that it would do the work.

Q. No. I am asking you what was said by Mr. Ohl, if anything, about how long the machine would last and what work it would do?

A. Well, he prided himself on the fact that he had machines 40 and 50 years old."

On cross-examination as to such conversations he testified:

"Q. I ask you only to give us the conversation which took place between you and Mr. Ohl on November 23, 1925, when you went there the second time to his factory, after

you had gotten all these blueprints, and all this, and when you closed the business with him?

A. Well, I will try to recollect the best I know how. I told him I wanted a machine that will bend our stringers up to three-eighths.

Q. You told him that the first time, didn't you, Mr. Smith?

Mr. Gallagher: Wait a moment. Pardon me. May the witness complete his answer?

The Court: Yes, go on.

The Witness: I told him I wanted a machine that will bend material without getting it out of shape, or bending it to shape as per our specifications up to three-eighths of an inch, 12 foot long. That was the most sensible thing because the original machine of Mr. Ohl's was only a 10-[fol. 241] foot machine, and this was a 12-foot 6 machine. I am very positive of that. In fact, that is where the conversation came in with Mr. Ohl—'Is your machine as good as a steel machine, because I had conversation with him about a steel machine and that is about the same as Mr. Ohl's press.' I was preferring to buy a machine nearer home. The other party, by the way, was out west. I impressed on Mr. Ohl the importance of having a machine that would bend my material up to three-eighths of an inch thick, and 12 foot long. That was the most important thing. As I have already mentioned, Mr. Ohl's answer was—I don't know about the exact words— 'If I thought a steel machine, after being in business so long, if I thought a steel machine was better than a cast iron machine I would build it out of steel myself.' Then, of course, we consummated the sale.

Mr. Friedman: Now, if your Honor please, I ask that all be stricken out?

The Court: I will allow it and save your exception.

Q. Was anything said in that interview between you and Mr. Ohl about the specifications that he had sent you to Boston on the 9th of November?

A. I believe that the specifications had been mentioned.

Q. Did you tell him that those specifications were satisfactory?

A. I don't remember whether I said it in those words, but the specification is satisfactory to me if it will do what it says it will."

2. That the court erred in its ruling admitting the following question:

"Q. Did you by these specifications understand you were to get anything suitable for the work you described?

Mr. Friedman: Wait a minute; I object.

Mr. Gallagher: The basis has been laid here by this cross-examination.

The Court: I will allow it and save your exceptions.

A. Decidedly so, before." [Smith, redirect.]

[fol. 242] 3. That the court erred in its ruling admitting the following question:

"Q. Now, can you understand how anybody reading Exhibit CC, anyone having any mechanical learning, could have understood that trouble was limited to the flywheel bearings and not transmitted through the shaft to the disc?

Mr. Friedman: Just a minute.

The Court: I will allow it and save your exceptions.

A. No." [Hovasse, redirect.]

4. That the court erred in refusing to permit the identification on Exhibit TT of the locus of trouble referred to in Exhibit CC as follows:

"Q. Will you mark this Exhibit TT?

The Court: Don't mark it yet until I pass on it.

Q. In ink to show the outline of the place where the bearing in the letter of June 25, Exhibit CC, is located.

The Court: That I refuse because the letter has been shown to be in error. I will save your exception." [Hovasse, cross.]

5. That the court erred in excluding the following question:

"Q. I am going to ask you just another thing. You say you have worked these presses up in the——

A. Osgood-Bradley Car Company.
Q. The Osgood-Bradley plant?
A. Car Company.
Q. And did you have long pieces there?
A. Sixty-five to 70 feet long, some of them.
Q. And how heavy metal?
A. Quarter-inch up to three-eighths.
Q. And do you find that when such pieces come through the press they have no bowing in them?

Mr. Witte: Just a moment. Are you now referring to Osgood-Bradley?
Mr. Friedman: Yes. I am testing this man's experience.
Mr. Witte: Then I am objecting to the question.
The Court: I will exclude it.
[fol. 243] Mr. Friedman: Will your Honor save my exception? Shall I make an offer of proof?
The Court: No, you needn't.
The Court: I refuse it and will save your exception."
[Carron, cross.]

6. That the court erred in admitting the following question:

"Q. In the particular machine in question did or did you not have dfficulty in bending one-quarter inch stock at a 90-degree angle without bowing?

Mr. Friedman: I object.
The Court: I will allow it.
Mr. Friedman: Your Honor will allow my exception?
The Court: Yes.
[The question is read.]
A. Yes, sir." [Carron, redirect.]

7. That the court erred in admitting the following question:

"Q. Now, what do you say in your judgment would be the probability of your being able to bend three-eighths stock at a 90-degree angle without bowing?

Mr. Friedman: I object to that.

Q. In view of your experience on quarter-inch stock?

Mr. Friedman: I object to that.
The Court: I will allow it and save your exception.

The Witness: I don't think that the machine could bend three-eighths stock over a die two and one-quarter inch-wide. [Carron, redirect.]

8. That the court erred in admitting the following question:

"Q. Now let me ask you this question: Whether or not in your opinion it would be possible on that machine, with the experience you had with it, to bend three-eighths inch stock at a 90-degree angle on that same die that you used for your quarter-inch without showing bowing?

Mr. Friedman: I object to that.
The Witness: No, sir.
Mr. Friedman: Save my exception.
[fol. 244] The Court: Yes.
Mr. Witte: The answer is no, sir. You said no, sir." [Carron, redirect.]

9. That the court erred in admitting subject to Ohl's exception the testimony:

"There was no safety device on the machine as there are usually in machines of this type." [Townsend, direct.]

10. That the court erred in admitting the following question as to repairs to the broken stanchion:

"Q. What was the total cost of that?

Mr. Friedman: Does your Honor allow that?
The Court: Yes, and I will save your exception. Go ahead with the total.
The Witness: $1,858.31." [Lerner, direct.]

11. That the court erred in admitting the following question:

"Q. And I will ask you whether or not that is proper construction in your opinion in a metal-forming press to operate it without or cause it to be operated without some sort of a safety device. We will assume that the press, this metal-forming machine, is called upon to bend anything up to three-eighths commercial steel in dies 2¼ inches across and downward at angles of 90 degrees or less?

Mr. Friedman: To that I object.

The Court: I will allow it and save your exception. Is it proper to use such a die without a safety device?

Mr. Witte: Such a machine?

The Court: Such a machine.

The Witness: With proper allowances in its construction, yes.

Q. Proper allowances in what?

A. In its construction.

Q. What do you mean by that?

A. I mean by that by additional material, of stiffer nature, either being inserted or shrunk into the casting of which this machine may be designed.

[fol. 245] Q. In other words, if the factor of safety is great enough?

A. Is great enough." [Perkins, direct.]

12. That the court erred in admitting the following question:

"Q. As a result of these computations you made and the different consultations you had with Townsend, what conclusions did you come to as to the factor of safety that was provided for in this Ohl machine?

Mr. Friedman: That I object to.

The Court: I will allow it and save your exceptions.

The Witness: From our observations and our calculations we decided that the machine was far below in factor of safety to properly do the three-eighths by twelve-foot section it was designed or guaranteed to do." [Perkins, direct.]

13. That the court erred in admitting the following question:

I have seen an Ohl press, not of the 12 foot type except the one at the Smith plant. I have seen the lighter types, 8 to 10 foot long.

"Q. Bearing that in mind, that Ohl machine of 8 or 10 feet, and add to it 2 feet, and assume in all other respects it is the same as the 10-foot machine, except that it is 12 feet, and will take a 12-foot piece, and that it was expected to bend up to 3/8ths, or 3/8ths metal, 12 foot, on square dies, the female of which measures 3 inches across, and that the

machine was of the general type that is pictured in these prints that I show you marked 'Exhibit 14'—bearing that in mind, and then, bearing in mind what you saw of that machine and its operations, and bearing in mind that was delivered in March of 1926, and then take into account what you saw of that machine and its limitations and infirmities in March, 1928, and bearing in mind all of the infirmities that you know about the machine, what, in your judgment, was the fair value of that machine in March of 1926?

Mr. Friedman: I object to that.
The Court: 1926.
Mr. Witte: Yes, 1926.
[fol. 246] The Court: I will allow and save your exception.
The Witness: Knowing that the——
Mr. Friedman: Pardon me just a moment.
The Court: You may answer.
The Witness: Knowing the deformities——
Mr. Friedman: No.
The Court: What is the fair valuation?
The Witness: What I place as fair valuation?
Mr. Witte: Yes.
A. I have got to assume those deductions.
Mr. Witte: Yes, come to the net results.
A. Net results—I would say about $2500." [Perkins, direct.]

14. That the court erred, Smith having rested, in denying Ohl's motion—

That Smith "be required to elect whether it will proceed under its defense in this action or under its cross action being tried herewith".

15. That the court erred, Smith having rested, in denying Ohl's motion that Smith—

"Be required to elect whether it will proceed with this action or rely upon its defense in the cross action being tried herewith."

16. That the court erred in excluding the following question:

"Q. Have you the right housing the same way?
A. Yes.

The Court: That I exclude. We are not interested in the right housing. I exclude it and save your exception. Go ahead.

Mr. Friedman: All right. Just to mark it for identification.

[Foundry testing report marked 'Plaintiff's Exhibit 29 for identification']." [Davis, direct.]

17. That the court erred in excluding the following question:

After the castings were made they were cleaned, chipped and a surface inspection made by looking them over, hammering and chipping them.

[fol. 247] "Q. What do you mean by hammered and chipped?

A. We usually use a big hammer for testing castings, which is common foundry practice.

Q. Was anything, according to your records, found defective in that casting?

Mr. Witte: I pray your Honor's judgment.

The Court: That I exclude and save your exception." [Davis, direct.]

18. That the court erred in admitting the following question:

"Q. Did the foundry guarantee the tensile strength and the endurance of the housings in this case?

Mr. Friedman: I don't see how that is material.

The Court: That I will allow and save your exception.

A. No, sir, we don't guarantee nothing." [Davis, cross.]

19. That the court erred in excluding the following question:

"Q. Assuming that a test bar of this kind was taken out of a casting that had been in use—if you assume that a casting had been under a strain, would that affect its tensile strength?

A. I don't think so.

Q. Would it affect—you don't think so. Suppose the machine had been stressed to the point of metal fatigue, would that affect the tensile strength of the metal?

A. Yes.

Mr. Witte: Wait a moment.
The Court: That I exclude.
Mr. Friedman: Your Honor will have in mind that Mr. Perkins testified that there had been a metal fatigue in the stanchion that broke.
The Court: He said that is what he thought was the reason for it. I exclude it and save your exception. Incidentally, I know nothing about the subject, but I suppose it might be the fact that part of the stanchion might be awfully tired and another part not. Certain parts of the body are more fatigued than others at times. I find it so sitting in court all day. It may be true of the stanchion." [Davis, redirect.]

20. That the court erred in excluding the following question:

[fol. 248] Q. Do you know what the cost is of a new stanchion, such as you saw on that Smith press?

Mr. Witte: I pray your Honor's judgment.

A. If you will give me a couple of minutes.
Q. Wait a minute. In 1925.

The Court: What is the question? The cost of it?
Mr. Friedman: Price of it, I think I said.
Mr. Witte: I pray your Honor's judgment. We were not buying stanchions. We were buying an entire machine.
Mr. Friedman: Yes, but your Honor has in mind this question: that one stanchion broke, and I suggest the price of replacing that stanchion is an element that is properly to be considered here.
The Court: That I exclude and save your exception.
Mr. Friedman: And I take it, in accordance with your Honor's suggestion the other day, in the way you exclude evidence, you do not require any offer of proof?
The Court: No, sir." [Kingsland, direct.]

21. That the court erred in excluding the following question with reference to Exhibit CC:

"Q. When you received that letter (Exhibit CC) could you tell what they were complaining about in your machine?

Mr. Witte: Wait a minute.
The Court: That I exclude.

Mr. Friedman: I offer to show your Honor that the leter was not such as to furnish him with any idea of what they were complaining about.

The Court: I will exclude it and save your exception." [Ohl, direct.]

22. That the court erred in excluding the following question with reference to the machine and dies:

"Q. And were they adapted to the work for which they were designed?

Mr. Witte: I pray your Honor's judgment?

The Court: That I exclude.

[fol. 249] Mr. Friedman: I will have an exception, your Honor?

The Court: Sure." [Ohl, direct.]

23. That the court erred in admitting into evidence Exhibit RRR.

24. That the court erred in admitting the testimony as to the tensile strength of specimens taken during trial by Smith from the area of the break in the broken stanchion of the machine in question showing a tensile strength for one specimen of 25,600 pounds and for the other of 26,800 pounds per square inch. [Mann, direct.]

25. That the court erred in admitting testimony as to the average strength of the stanchion based on the cross-sectional area and on the tests on test bars taken from that stanchion after and from the area of the break in that stanchion.

26. That the court erred, both parties having rested, in denying Ohl's motion that Smith:

"Be required to elect whether it will proceed under its defense in this action or under its cross action being tried herewith."

27. That the court erred, both parties having rested, in denying Ohl's motion that Smith:

"Be required to elect whether it will proceed with this action or rely upon its defense in the cross action being tried herewith."

28. That the court erred, both parties having rested, in denying Ohl's motion:

"That the court herein direct a verdict for the plaintiff, Ohl."

29. That the court erred, both parties having rested, in denying Ohl's motion:

"That the court herein direct a verdict for the defendant, Ohl."

30. That the court erred in refusing to rule upon the effect of the evidence under Smith's answer in Ohl's case—absence and failure of consideration—in refusing Ohl's requests:

[fol. 250] 2. The Smith complaints in these cases concern only the machine itself.

3. Smith received, has retained, and still has the machine which Ohl delivered in performance of the contract between them.

4. In the Ohl case there was on all the evidence adequate consideration for the notes declared on.

5. In the Ohl case there was on all the evidence no total failure of consideration.

6. In the Ohl case on all the evidence the only partial failure or failures of consideration claimed by Smith arise through the alleged breaches of warranty.

31. That the court erred in refusing Ohl's request No. 9-A, "The contract between the parties is governed by the Sales Act."

32. That the court erred in refusing to rule on the application to the pleadings and evidence of General Laws Chapter 106, Section 58 (1) (a) (b) and (2), by refusing Ohl's request:

7. Smith's defense in the Ohl case has the same legal effect as though that action were for a purchase price of the machine and the defense was by way of recoupment for breaches of warranty.

8. Smith may not at the same time defend in the Ohl case for a claimed failure of consideration and in the Smith case

keep the machine and maintain an action against Ohl for claimed breaches of warranty.

9. Smith having elected to sue Ohl in an independent action for alleged breaches of warranty, and having elected to retain the machine, waived his defense in the Ohl case and is limited to such rights as he can establish in the Smith case.

33. That the court erred in refusing to rule on the legal scope and limits of the written contract Exhibit A and the documents therein incorporated by reference in refusing Ohl's requests:

10. The contract between Ohl and Smith is fully contained in Ohl's letter to Smith of November 9 (Exhibit 13), the specifications there referred to (a part of Exhibit 14), [fol. 251] Smith's letter to Ohl of November 24, (Exhibit B), Ohl's letter to Smith of December 4, (Exhibit C) and its enclosure dated December 2 (Exhibit D) and the agreement of March 1 with its attached rider dated March 9 (Exhibit A).

11. The rider of Exhibit A is an express warranty.

12. The express warranty of Exhibit A incorporates by reference to "our specifications of said press" so much of the specification of Exhibit 14 as concern- the capacity of the press stated in those specifications.

34. That the court erred in refusing correctly to construe and explain to the jury the language of Exhibit A and the documents therein incorporated by reference and the legal effect thereof in refusing Ohl's requests:

13. Those specifications expressly refer to a "bending" capacity.

14. The express warranty in this case is limited to a warranty of bending capacity.

15. The express warranty in this case is limited to a warranty of bending capacity and does not include a setting capacity as well as a bending capacity.

70. The express warranty of the Ohl Company is in writing in plain unambiguous language, and its construction is a question of law for the court.

71. That there is no language used in the express warranty that has any peculiar or trade meaning.

72. That there is no evidence in the case to give to any language used in the warranty any meaning other than its ordinary everyday meaning.

73. The meaning of the express warranty is that the machine is not required to do anything more than to bend ⅜" soft steel on dies the female of which measures 3" across the corner.

74. To bend metal is different from setting it. The process of bending metal does not necessarily include the process of setting.

[fol. 252] 75. The common accepted definition of "to bend" is to bring into a curve or out of or aside from a straight line.

76. The common accepted definition of "to set" is to put into a fixed permanent or immovable condition, position or form.

35. That the court erred in refusing to instruct the jury as to the legal effect of Exhibit A and the documents therein incorporated by reference in application to the evidence by refusing Ohl's requests:

16. On all the evidence a machine of this type requires a greater capacity to bend and set soft steel on dies than merely to bend such soft steel on the same dies.

17. A claim of a warranty that the machine was to have a capacity to bend and set ⅜" soft steel (or any lesser thickness) on square dies the female of which measures 3" across the corners is inconsistent with the express language used in the express warranty which describes that capacity as for "one bend at a time", describes the machine as one "which will bend" the heavier gauge of material and which will bring out "multiple bends".

18. The fact that the express warranty is for a bending capacity negatives the existence of any implied warranty that the machine also would set a bend when made.

19. If the jury find that the machine had sufficient capacity to bend ⅜" soft steel one bend at a time on dies the

female of which measures 3″ across the corners then Smith may not recover for any deficiency in the capacity of the machine.

63. An express warranty negatives all other warranties or conditions inconsistent with it.

64. The express warranty given by Ohl to Smith as shown in Exhibit A does not contract that the machine will bend ⅜″ soft steel to any given angle.

68. Smith's claim is that the machine should have capacity (a) on dies the female of which is 3″ across the cor- [fol. 253] ners (b) using ⅜″ soft steel (c) to bend (d) and set the bend (e) to a 90 degree angle (f) at one operation.

69. The elements a, b and c in the foregoing request are within the express warranty but none of the elements d, e or f are within that express warranty, and even if the Ohl machine could not perform d, e and f, there is no liability on the Ohl Company for breach of any warranty on that score.

36. That the court erred in charging the jury: "There is also an implied warranty as it is called that the machine would do perfect work—that is simply all the law there is to it really—so the only question here is—was that machine a reasonable and proper machine and did it in fact bend this steel, this soft steel, in the way which the manufacturer Ohl agreed that it would bend that steel—but it is all a question of fact—there is a minor question of bending and the difference between bending and setting. I don't personally get the idea of what you want to set steel for, or bend it rather, without setting—I don't quite see what that amounts to but you are the arbiters of that and it is for you to say whether in making these risers and stringers that the iron must not only be bent but must be set. All that is within your province—the whole thing I say comes down to a question of fact. Would this machine bend the iron in a proper way to turn out merchantable stair treads and risers and stringers? Now it is up to you to say on this whole case—in the first place—did the machine do or would the machine have done if properly handled and operated the work in turning and bending those soft steel plates."

37. That the court erred as to Smith's claim that it was on the evidence entitled to a safety device on the machine in question by refusing Ohl's requests:

20. On all the evidence the machine delivered to and received by Smith was of the design shown in Exhibits 13 and 14 (Ohl to Smith November 9, 1925 and enclosures, Exhibits 13 and 14).

21. There is no evidence that the design of the machine [fol. 254] in question calls for any so-called safety device that was omitted in the machine when delivered.

22. The express warranty of Exhibit A does not require any so-called safety device.

23. The express warranty of Exhibit A "that the material and workmanship are of the best" does not include any warranty as to the design of the machine.

23a. The express warranty of Exhibit A that the machine has a capacity of $\frac{3}{8}$" soft steel as stated in the specifications does not include a warranty as to the design of the machine.

24. If the machine had the capacity called for by the contract it is immaterial whether or not it had any device to prevent breakage when operated beyond that capacity.

38. That the court erred in charging the jury: "Also there is a disputed question about whether a safety device of some kind was necessary, and whether this clutch amounted to a safety device in that it would slip if it was properly adjusted. These are questions of fact, gentlemen, on which you are the final judges."

39. That the court erred in refusing to rule as to the legal effect of Smith's specifications in refusing Ohl's requests:

25. Smith has specified that the press from the very beginning rendered unsatisfactory service in the particulars specified in specifications 3-A to E.

26. It is uncontroverted that the press was first operated by Smith on April 15, 1926.

27. Smith herein is charged with actual knowledge beginning on or about April 15, 1926 of the claimed defects in the

machine fairly within the scope of specifications 3-A to E inclusive.

62. The Smith Company is bound by and limited to matters set out in its specifications.

40. That the court erred in refusing to rule on the effect of General Laws Chapter 106, Section 38, calling for reasonable notice of claimed defects within a reasonable time, in its application to Smith's "Safety device claim" and the evidence material thereto in refusing Ohl's requests:

[fol. 255] 65. The lack of any safety device other than the 25-inch diameter friction clutch was a matter apparent to Smith at *at* the time the machine was delivered and assembled and before April 15, 1926.

66. No notice of complaint based on any lack of a safety other than such friction clutch prior to Exhibit 20 of November 22, 1926 is in evidence.

67. Smith may not recover for any damage due to any lack of any safety device other than the 25-inch diameter friction clutch.

41. That the court erred in refusing to rule on the effect of General Laws Chapter 106, Section 38, calling for reasonable notice without reasonable time of defects claimed by a buyer in its application to Smith's specifications and the evidence by refusing Ohl's requests:

28. It is uncontroverted that the first notice to Ohl of any claim of any breach of waranty was that specified in Specification 9-A, letter of June 25, 1926. [Exhibit CC.]

29. On all the evidence Smith accepted the machine as that word is used in the Sales Act.

30. The law provides that if Smith having accepted the machine failed to give Ohl notice of the breach of any promise or warranty within a reasonable time after he knew or ought to have known of such breach Ohl shall not be liable therefor.

33. A notice given on June 25 of breaches of warranty fairly within the scope of specifications 3-A to E inclusive is as a matter of law not given within a reasonable time.

34. Smith may not recover for any breaches of warranty fairly within the scope of specifications 3-A to E inclusive.

39. The next notice is that of August 23 which specifies a claim of failure to bend without material deflection and a defect in the clutch. [Exhibit II, specification 9.]

40. On all the evidence the clutch defect claimed in that notice refers to a defect in the flywheel assembly, itself referred to in specification 3-B.

[fol. 256] 41. Smith is charged with knowledge of that clutch trouble from the very beginning or from on or about April 15, 1926. [Specification 3.]

42. The August 23 notice as it concerns a claim of a clutch defect was as a matter of law not given within a reasonable time as required by statute.

43. The failure to bend material without a material deflection claimed in the August 23 notice is fairly within the scope of specification 3-D.

44. Smith is charged with knowledge of the defect claimed in that notice from the very beginning or from on or about April 15. [Specification 3.]

45. That notice as a matter of law was not given within a reasonable time as required by statute.

46. The next notice claimed is that of August 25. [Exhibi-JJ, specification 7.] That notice refers to various parts in the flywheel assembly more specifically described in the notice.

47. Smith is charged with knowledge of defective operation of that flywheel assembly from the very beginning, or April 15, 1926. [Specification 3.] That notice as a matter of law was not given in time to satisfy the requirements of the statute as to notice so far as it concerns anything concerning the flywheel assembly.

48. That notice claims the 16-inch bushing was a poor loose fit and turned around. On Smith's own evidence it is uncontroverted that that bushing turned around and the looseness of fit was claimed to have been observed by Smith on April 15, 1926.

49. The August 25 notice as it concerns the 16-inch bushing was not given in time to satisfy the statute as to notice.

52. Specification 11-A is fairly within the scope of specification 3-B and with that claimed defect Smith from the very beginning is charged with knowledge.

53. Specification 11-A was not a notice given within a reasonable time to satisfy the statute as to notice.

[fol. 257] 54. Specification 11-B is fairly within the scope of specification 3-D, and with that claimed defect Smith from the very beginning is charged with knowledge.

55. Specification 11-B was not a notice given within a reasonable time to satisfy the statute as to notice.

58. Exhibit 20, the Swett-Townsend report, is not a notice given so as to satisfy the requirements of the statute as to notice.

59. That bowing of the plate after bending if due to the machine was a defect fairly within the scope of specification 3-D with knowledge of which Smith is charged from the very beginning or on or about April 15, 1926.

60. As to that bowing Exhibit 20 is not a notice given in time to satisfy the requirements of the statute.

42. That the court erred in charging the jury: "There is a question of law, evidence as to whether a notice of defect was given within a reasonable time, and on that I rule that it was so given and an exception will be taken to that ruling."

43. That the court erred in refusing to grant Ohl's 32d request: "The decisions of the Supreme Judicial Court of the Commonwealth of Massachusetts in construing the Sales Act are binding upon the court."

44. That the court erred in refusing to rule on the adequacy in law and on the evidence of notices of defects to Ohl claimed by Smith in refusing Ohl's requests:

35. The notice which the Sales Act calls for must fairly advise the seller of the alleged defects.

36. The June 25 notice (Exhibit CC) on the uncontroverted evidence of Smith erroneously refers to an alleged

defect that did not then exist and that exhibit did not refer to the defect which Smith claims then existed.

37. The June 25 notice even though seasonably given was insufficient to satisfy the requirements of the Sales Act as to notice.

38. It is uncontroverted that the next notice claimed was [fol. 258] that of August 13, 1926 [Exhibit EE, specification 9]. That notice does not fairly advise Ohl of any alleged defect and, therefore, does not satisfy the requirements of the statute as to notice.

50. The next notice claimed is that of September 1 [specification 9], which is specified to have been oral [specification 10] and to have included the claimed defects defined in specifications 11-A to E.

51. Specifications 11-C, D and E did not fairly advise Ohl of any claimed defects and are not sufficient to satisfy the requirements of the statute as to notice.

56. The next notice claimed was that of September 3 [Exhibit MM, specification 9].

57. That notice does not fairly advise Ohl of any claimed defect and is not sufficient to satisfy the statute as to notice.

45. That the court erred in refusing Ohl's 61st request: "Ohl is not responsible for a damage to the machine resulting from the defective sub-support criticized in Exhibit 20."

46. That the court erred in charging the jury that it is for the jury: "To say whether it [the machine] broke under a fair trial or whether at the time that it broke it had an improper load put on it and the machine was operated improperly."

47. That the court erred in charging the jury with reference to Ohl's witness Dailey: "I really think I ought to warn you not to be too prejudiced against the Ohl Company for their mistake in sending that liar to the Smith shop to look at that machine because it is natural for you and me to love the truth and think very badly of Mr. Dailey."

48. That the court erred in charging the jury on Smith's damages in charging: "If on the other hand you find the machine would not do it, you must make up your minds what that machine is worth in its present condition or what it would have been worth rather at the time before it was broken, what a machine like that machine which wouldn't do quite what it was agreed to do—what that would have been worth at the time before it broke—there [fols. 259 & 260] is some evidence as to the present value of that machine and you may find on that what it is * * * you will find what the machine is worth."

49. That the court erred in charging the jury with reference to Smith's claim for repairs as damages in ruling that the jury: "May also find for the plaintiff [Smith] for the sum of money which they spent in fixing up the flywheel in one case and also the repairing of the machine. * * * You may add to it the amount which they spend for repairs in the neighborhood of $2,500."

50. That the court erred in not adequately instructing the jury on the issues raised by the pleadings, specifications, evidence and requests for rulings.

51. That the court erred in failing in its charge to present to the jury issues of the case.

52. That the court erred in failing to give to the jury instructions to guide them on the issues of law involved in the case and raised by the evidence and Ohl's requests for instructions.

53. That the court erred in failing to instruct the jury as to its verdict in the Ohl v. Smith case in the event that it found that the machine was not what the contract called for.

54. That the court erred in each case in denying Ohl's motion for a new trial.

55. That the court erred in not instructing the jury that no notes or testimony or measurements of exhibits were to be taken by the jurors except under instructions of the court in open court and in overruling the plaintiff's motion for a new trial based on this.

George A. Ohl & Co., by Friedman, Atherton, King & Turner, Its Attorneys.

Bond on appeal for $9,000, approved and filed November 25, 1930, omitted in printing.

[fol. 261] IN UNITED STATES DISTRICT COURT

DEFENDANT'S PRÆCIPE FOR TRANSCRIPT OF RECORD—Filed November 25, 1930

1. Writ and return.
2. Declaration, omitting Exhibit A and substituting therefor the following Exhibit A, referred to in the declaration, is here omitted as it is set forth in full in the substitute bill of exceptions herein.
3. Defendant's answer.
4. Defendant's motion for specifications. Omit plaintiff's specifications as amended and substitute therefor: "Plaintiff's specifications as amended are omitted as they are set forth in full in the substitute bill of exceptions."
5. Jury empanelled.
6. Defendant's motion for election and order.
7. Defendant's motion for directed verdict and order.
8. Jury verdict.
9. Defendant's motion for new trial.
10. Hearing on motion for new trial and order.
11. Defendant's bill of exceptions with reference to motion for new trial, omitting therefrom the copy of the motion for a new trial attached.
12. Defendant's substitute bill of exceptions and amendment thereto.
13. Defendant's petition for appeal.
14. Defendant's assignment of errors.
15. Defendant's bond on appeal.

Lee M. Friedman, Friedman, Atherton, King & Turner, Its Attorneys.

November 25, 1930.

Service of the above præcipe is hereby acknowledged and the right to file a cross præcipe is waived.

Martin Witte, Attorneys for A. L. Smith Iron Works, Plaintiff.

[fol. 262] Citation, in usual form, showing service on Martin Witte, omitted in printing.

[fol. 263] Clerk's certificate to foregoing transcript omitted in printing.

MEMORANDUM RE ORDER ENLARGING TIME

[MEMORANDUM.—An order for enlargement of time for docketing cases to, and including, January 26, 1931, is here omitted.—A. I. Charron, Clerk.]

[fol. 264] Minute entry of argument and submission, October 22 and 23, 1931, omitted in printing.

[fol. 265] IN UNITED STATES CIRCUIT COURT OF APPEALS FOR THE FIRST CIRCUIT, OCTOBER TERM, 1931

No. 2537

GEORGE A. OHL & Co., Plaintiff, Appellant,

v.

THE A. L. SMITH IRON WORKS, Defendant, Appellee

No. 2538

Same

v.

Same

Appeals from the District Court of the United States for the District of Massachusetts

Before Bingham, Wilson, and Morris, JJ.

OPINION OF THE COURT—Filed March 22, 1932

MORRIS, J.:

These suits are counter actions involving a contract for the manufacture and sale of a heavy power press or brake for the bending and shaping of metal.

George A. Ohl & Co., plaintiff in the first action and defendant in the second action, is a corporation organized under the laws of the State of New Jersey, with a place of business in Newark in said State. It is engaged in the manufacture of different kinds of machines for stamping, rolling, bending and cutting sheet metal products.

The A. L. Smith Iron Works is a Massachusetts corporation having a place of business in Chelsea in said [fol. 266] Commonwealth. It is engaged in structural steel and ornamental iron business. One of its principal lines is the fabrication and installation of metal stair stringers, treads and rails used in the construction of stairways in large buildings.

The subject of litigation between the parties is a machine for fabricating such stair material.

From the pleadings and arguments of counsel, it appears that on November 24, 1925, the Smith Company wrote to the Ohl Company ordering a press to be manufactured according to specifications previously furnished by the Ohl Company. The purchase price of the press with certain accessories and dies was $12,009.68. The terms of payment were $1,000 cash with order, $1,000 when the machine was ready for delivery, $250 cash with the order for dies, and the balance of $9,759.68 by 18 notes, the first note for $545.68 and 17 notes for $542 each, the first note payable thirty days from the date thereof and the remaining notes at intervals of one month each or sooner.

This contract was put in writing and bears date of March 1, 1926. On March 9, 1926, the following rider was physically attached to the contract:

"Newark, N. J., March 9, 1926.

We hereby guarantee that the 12′ 6″—103,000 Power Press has a capacity stated in our specifications of said press, namely ⅜″ steel on square Dies the female of which measures 3″ across the corners, and that the material and workmanship are of the best.

Geo. A. Ohl & Co. F. J. Wepler, Secretary."

From the pleadings in the case, it appears that the machine was completed, shipped and installed in the Smith Company's factory in March and first operated April 15,

1926; that it was unsatisfactory in several particulars and the Smith Company refused to pay the last twelve notes aggregating $6,404 with interest and protest fees.

The first action, No. 2537, was brought by the Ohl Company against the Smith Company to recover on the above mentioned notes.

[fol. 267] In its answer the Smith Company after pleading the general issue set up want of consideration and failure of consideration.

Upon being called upon for specifications the Smith Company set out in detail the particulars in which it claimed the machine failed to meet the requirements of the guarantee in the rider attached to the contract.

The second action, No. 2538, brought by the Smith Company against the Ohl Company set out the guaranty and breach of the same.

The answer of the Ohl Company admitted the contract and its terms; denied all other allegations, and set up an examination and acceptance by the Smith Company in satisfaction of all warranties.

The pleadings in the case appear to be in form to raise the issues between the parties. The two cases were tried together before a jury. In 2537, Ohl Co. v. Smith Company, there was a verdict for the defendant. In 2538, Smith Co. v. Ohl Co., there was a verdict for the plaintiff for $7,500.

Judgments were entered in the District Court upon these verdicts.

The Ohl Company alleged errors and filed in the District Court a document headed "Bill of Exceptions." The document does not bear the signature of the District Judge. The so-called bill of exceptions is signed by the attorneys and is initialed by the District Judge as follows:

> "By Friedman, Atherton, King & Turner, Its Attorneys.
>
> Assented to.
> Martin Witte, Robert Gallagher, Attorneys for A. L. Smith Iron Works.
>
> Allowed August 20, 1930.
> J. A. L., D. J."

Counsel for the Smith Company take the position that there is a fatal defect in the record, in that the bill of ex-

ceptions filed by the Ohl Company is not properly authenticated, and for this reason they move that the bill of excep- [fol. 268] tions be stricken from the record. They further take the position that there is no certificate by the judge to the effect that the bill of exceptions contains all the material evidence in the case.

Congress by Section 4 of the Act of June 1, 1872, c. 225, now Sec. 953 of the Revised Statutes (28 U. S. C. A. 776), enacted as follows: "A bill of exceptions allowed in any cause shall be deemed sufficiently authenticated if signed by the judge of the court in which the cause was tried, or by the presiding judge thereof if more than one judge sat on trial of the cause, without any seal of court or judge being annexed thereto."

The Supreme Court of the United States in construing this statute has held that initials of the trial judge do not constitute an authentication sufficient to enable an appellate court to consider exceptions on review. Origet v. United States, 125 U. S. 240, 244. In this case a paper headed "Bill of Exceptions" not bearing the signature of the judge, but containing at its foot these words, "Allowed and ordered on file, November 22, '83, A. B." was before the court for consideration. Mr. Justice Blatchford delivering the opinion of the court says:

"This provision merely dispensed with the seal. The necessity for the signature still remains. We cannot regard the initials, 'A. B.' as the signature of the judge, or as sufficient authentication of the bill of exceptions, or as sufficient evidence of its allowance by the judge or the court. Therefore, the question purporting to be raised by the paper cannot be considered."

In the case of Kinney v. United States Fidelity Co., 222 U. S. 283, Chief Justice White, commenting on a like situation, says: "The paper in the record styled 'Exceptions to the charge to jury,' initialed 'J. B. McP., trial judge' and signed by the plaintiff is not a bill of exceptions."

In the case of Maloney v. Adsit, 175 U. S. 281, it was held that allowing and signing a bill of exceptions is a judicial act, which can only be performed by the judge who sat at the trial; and section 953 of the Revised Statutes is intended to provide and does provide that no bill of exceptions

[fol. 269] can be deemed sufficiently authenticated unless signed by the judge who sat at the trial or by the presiding judge if more than one sat.

This case was decided December 4, 1899. Following its decision Congress on June 5, 1900, amended Rev. Stat. 953 by adding a provision allowing, in case of death of the presiding justice, another judge to pass upon the bill of exceptions if the evidence in such case has been taken in stenographic notes, or if the judge is satisfied by any other means that he can allow a true bill of exceptions.

In the case of Krauss Bros. Co. v. Mellon, 276 U. S. 386, decided by the Supreme Court April 9, 1928, Chief Justice Taft after quoting in part Sec. 953 of the Revised Statute says: "Since the passage of that Act it is not necessary to seal a bill of exceptions. Herbert v. Butler, 97 U. S. 319, 320; Maloney v. Adsit, 175 U. S. 281, 285, but the signature is still necessary." Citing the Origet and Kinney cases above mentioned.

Counsel for the Ohl Company takes the position that because the so-called "Bill of Exceptions" was assented to by counsel for the A. L. Smith Iron Works, therefore we should treat it as a bill of exceptions even though not signed by the District Judge.

Quoting from the opinion of the Circuit Court of Appeals in the case of Krauss Bros. v. Mellon, supra, Chief Justice Taft says:

"'As applicable to the deficiency of the record here shown the well settled rule is this. Depositions, exhibits or certificates not contained in the bill of exceptions cannot be considered even though found in the printed transcript. The parties by their affidavits or agreements cannot cause that to become a bill of exceptions which is not such in a legal sense.'"

The action at bar was tried before a jury and a verdict rendered May 7, 1929. The so-called bill of exceptions was initialed by the judge August 20, 1930. The term of court during which the case was tried and the one during which the bill of exceptions so called was presented for the judge's signature has long since terminated.

In the case of Oxford & Coast Line R. Co. v. Union Bank of Richmond, Va., 153 Fed. 723, it was held that a bill of

[fol. 270] exceptions cannot be considered by an appellate court unless it was duly presented to and allowed by the trial judge during the term at which the trial was had or within the time as extended by an order made during such term. Pritchard, Circuit Judge, says:

"While it is not the policy of the court to dismiss writs of error in cases on appeal on account of slight technicalities, at the same time, the rules of this court, as well as the rules of the Circuit Court, are plain and easily understood. In this instance the provision of the statute relating to the question at issue is mandatory and must be enforced. It is encumbent upon attorneys who practice in the federal courts to observe and strictly follow the rules of practice and procedure in preparing and presenting bills of exceptions." Citing Michigan Insurance Bank v. Eldred, 143 U. S. 298.

See Michigan Ins. Bank v. Eldred, 143 U. S. 293; Knight v. Illinois Central R. R. Co., 180 Fed. 368. Realty Acceptance Corp. v. Montgomery, decided by the Supreme Court, February 15, 1932.

In the Origet and Kinney cases above cited the Supreme Court was interpreting an Act of Congress and in so doing it held that a bill of exceptions was not sufficiently authenticated unless signed by the judge of the court and that the initials of the judge do not satisfy the provisions of the statute. We are bound by this ruling of the Supreme Court. It is too late to send the case back for amendment as the term at which the judgments were entered has expired and the District Court has lost jurisdiction of the case. Exporters v. Butterworth-Judson Co., 258 U. S. 365. United States v. Mayer, 235 U. S. 55, 67. Delaware L. & W. R. R. v. Rellstab, 276 U. S. 1. We see no escape from an order affirming the judgments of the District Court.

In No. 2537, the judgment of the District Court is affirmed with costs; and in No. 2538, the judgment of the District Court is affirmed with interest and costs.

[fols. 271 & 272] In United States Circuit Court of Appeals

Judgment—March 22, 1932

This cause came on to be heard October 22 and 23, 1931, upon the transcript of record of the District Court of the

United States for the District of Massachusetts, and was argued by counsel:

Upon consideration whereof, It is now, to wit, March 22, 1932, here ordered, adjudged and decreed as follows: The judgment of the District Court is affirmed with interest and costs.

By the Court.

Arthur I. Charron, Clerk.

[fols. 273-315] Petition for rehearing, covering 43 pages, filed April 20, 1932, omitted from this print. It was denied, and nothing more by order of May 6, 1932.

[fol. 316] Thereafter, to wit, on May 6, 1932, the following Order of Court was entered in each case:

IN UNITED STATES CIRCUIT COURT OF APPEALS

ORDER DENYING REHEARING—May 6, 1932

No judge who concurred in the judgment entered March 22, 1932, desiring a rehearing, it is ordered that the petition for rehearing filed April 20, 1932, be, and the same hereby is, denied.

By the Court.

Arthur I. Charron, Clerk.

MEMORANDUM RE STAY OF MANDATES

Thereafter, to wit, on May 17, 1932, mandate in each case was stayed until further order of court.

[fol. 317] Clerk's certificate to foregoing transcript omitted in printing.

[fol. 318] SUPREME COURT OF THE UNITED STATES, OCTOBER TERM, 1932

No. 228

ORDER ALLOWING CERTIORARI—Filed October 17, 1932

The petition herein for a writ of certiorari to the United States Circuit Court of Appeals for the First Circuit is granted. And it is further ordered that the duly certified copy of the transcript of the proceedings below which accompanied the petition shall be treated as though filed in response to such writ.

[fol. 319] SUPREME COURT OF THE UNITED STATES, OCTOBER TERM, 1932.

No. 229

ORDER ALLOWING CERTIORARI.—Filed October 17, 1932.

The petition herein for a writ of certiorari to the United States Circuit Court of Appeals for the First Circuit is granted. And it is further ordered that the duly certified copy of the transcript of the proceedings below which accompanied the petition shall be treated as though filed in response to such writ.

Endorsed on cover: File No. 36,925, 36,926. U. S. Circuit Court of Appeals, First Circuit. Term No. 228. George A. Ohl & Company, petitioner, vs. The A. L. Smith Iron Works. Term No. 229. George A. Ohl & Company, petitioner, vs. The A. L. Smith Iron Works. Petition for writs of certiorari and exhibit thereto. Filed July 15, 1932. File No. 36,925, 36,926.